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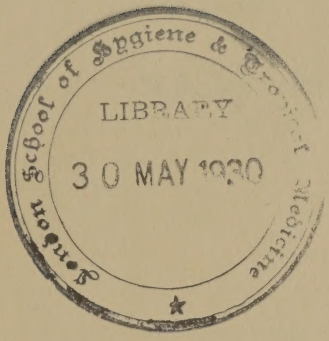
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Vol. XLV.] [Part I.

JOURNAL OF THE STATISTICAL SOCIETY,

MARCH, 1882.

The Economic Progress *of* Italy *during the* Last Twenty Years, *since the* Formation *of the* Italian Kingdom *in* 1861.

By Professor Leone Levi, F.S.A., F.R.G.S., *Doctor of Political Economy of the University of Tübingen; of Lincoln's Inn, Barrister-at-Law; Cavaliere dell' Ordine di St. Maurizio e Lazzaro, and of the Crown of Italy, &c., &c.*

[Read before the Statistical Society, 17th January, 1882.]

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Twenty years have now elapsed since Italy obtained unity and freedom, objects for the attainment of which she strove perseveringly and indefatigably for many long years. The immediate disturbances incident to the change from her divided condition in so many fragmentary States to one united kingdom, are no longer in operation, and sufficient time has elapsed to allow us to try the economic results of the change by statistical facts. It would be erroneous, indeed, to ignore the force and value of sentiment in political vicissitudes, and to subject it too closely to economic tests; nevertheless, the truest pledge of permanency in political institutions, lies in their utility, and it is not a vain question to ask, how far is Italy the better for all the sacrifices she has made to promote her national independence? Have the people of the

different States reason to congratulate themselves in having become members of a United Italy?

I.—*Formation of the Kingdom.*

The Kingdom of Italy was constituted on the 17th March, 1861, when Victor Emanuel united under his sceptre the country formerly belonging to the Kingdom of Sardinia, with the exception of the province of Savoy and the district of Nice, ceded to France by the treaty of Turin of 24th March, 1860, the portion of Lombardy ceded by Austria by the treaty of Zurich of 10th November, 1859, the duchies of Parma and Modena, and the Romagna, the Grand Duchy of Tuscany, the Marches and Umbria, and the Kingdom of the Two Sicilies, respectively annexed at different dates in 1860; also Venetia, ceded by Austria in 1866; and finally Rome, acquired from the Pope, and declared capital of the kingdom on the 9th October, 1870. A natural desire exists, especially among advanced politicians, in Italy for the union into the kingdom of "The Italia "irredenta," that is for the recovery of several portions of territory which at one time or another belonged to it, viz., westwards including Corsica, Nice, and Savoy; northwards, including the canton Ticino and the Italian Tyrol; eastward, including Istria and Trieste; and southward, including Malta. But these territories, which now belong to other States, would not add materially to the wealth of the country: they lie on the fringes of the kingdom, and any attempt to acquire them by force would possibly involve war with France, England, Austria, and Switzerland. The wisdom of Italy is to be content with the vast territory she has acquired, and to make it, as respects quietness and peace, production and wealth, lightness of taxation, and, if possible, exemption from the burden of the conscription for the military service, in fact, as well as in name, the garden of the world. Any movement in the direction of further acquisitions of territory would be most unwise and inexpedient, and might endanger the very existence of the State.

II.—*Territory.*

As now constituted, Italy has an area of 296,304* square kilometres, equal to 114,375 English square miles, being thus nearly equal in size to the United Kingdom, which has an area of 121,305 square miles. Italy is divided into 16 departments, 69 provinces, and 8,382 communes, as follows:—

* The facts and figures in this paper are derived principally from the "Annuario Statistico Italiano, 1881," the "Movimento dello Stato Civile," the "Annali di Statistica," and other official publications.

Departments.	Provinces.	Number of Communes.	Square Kilometres.	English Square Miles.
Piemonte	4	1,487	29,269	11,297
Liguria	2	317	5,324	2,055
Lombardia	8	1,965	23,527	9,082
Veneto	8	795	23,464	9,057
Emilia	8	323	20,515	7,919
Umbria	1	173	9,633	3,718
Marche	4	249	9,704	3,745
Toscana	8	278	24,052	9,284
Lazio (Rome)	1	227	11,917	4,600
Abruzzie e Molise	4	456	17,290	6,674
Campania	5	614	17,978	6,941
Puglie	3	236	22,115	8,536
Basilicata	1	124	10,676	4,122
Calabrie	3	410	17,257	6,662
Sicilia	7	360	29,241	11,287
Sardagna	2	368	24,342	9,396
	69	8,382	296,304	114,375

A most important fact connected with the topographic features of Italy, and which greatly affects her agricultural wealth, is the large portion she contains of highland. Of the 296,305 square kilometres, as many as 183,908 square kilometres consist of high or mountain land, and 112,397 of lowland plains, the elevation on the level of the sea ranging from 3,274 metres in the department of Turin, to 142 metres in the department of Reggio Emilia. Italy is highly favoured in navigable rivers, navigable lakes, and canals. Nowhere do land and water lend themselves, together with sunshine and clouds, to render the natural scenery so superb and beautiful. Italy has an extensive sea coast on the Mediterranean and Adriatic.

III.—*Population.*

The progress of the population of the States now composing the kingdom of Italy, before, and since their union, has been as follows:—

[000's omitted in population columns.]

States.	Population.		Increase per Cent., 1844-61.	Population, 1871.	Increase per Cent. 1861-71.	Population, 1877.	Increase per Cent., 1861-77.
	1844.	1861.					
Sardinia, without Nice and Savoy	3,992,	4,400,	10·2	4,678,	6·3	4,915,	11·7
Lombardy	2,640,	2,986,	9·2	3,162,	15·8	3,306,	10·7
Venice	2,236,	2,339,	4·6	2,643,	12·9	2,790,	19·2
Parma	494,	504,	2·2	524,	7·9	535,	6·1
Modena	507,	602,	18·2	642,	6·6	665,	10·4
Tuscany and Lucca	1,703,	1,826,	7·2	1,981,	11·7	2,040,	12·0
Roman States	2,930,	3,180,	8·9	3,412,	10·5	3,514,	10·5
Two Sicilies	8,434,	9,180,	8·8	9,760,	11·6	10,245,	11·6
Italy	**22,936,**	**25,016,**	9·2	**26,801,**	7·1	**28,010,**	11·9

Thus, in all cases, except in the small duchy of Modena, the increase of population appears to have been greater since the union of the different States than it was when they were separate. The mean annual increase of population in Italy, from 1801 to 1861, was 0·61 per cent., and from 1861 to 1877, 0·71 per cent. But the census of the population taken in the different States previous to 1861 were not altogether reliable.

At the census of 1871 Italy had a population of 26,801,000, which in relation to area gave a proportion of 234 persons per English square mile. In the United Kingdom, with a population in 1871 of 31,500,000, the proportion was 260; in Germany it was 203; in France 180; in Austria-Hungary 149; in Spain 85; and in Russia in Europe there were only 35 persons to the square mile. Italy therefore is rather thickly peopled, more especially in relation to her resources. Agriculture, her chief reliance, does not give sufficient returns, and commerce and manufacture do not yet afford large employment. Hence a necessity for emigration. In 1878 the number of emigrants from Italy was 96,268. There are six large cities in Italy, and their population was estimated in 1877 as follows:—

Rome	234,380
Milan	261,906
Naples	450,686
Turin	214,222
Florence	169,255
Palermo	230,318

IV.—*Movement of the Population.*

In Italy there is usually a high rate of births, a moderate rate of marriages, and a high rate of mortality. As compared with other countries, the average rates from 1865 to 1878 were as follows:—

Countries.	Marriages per 1,000.	Births per 100.	Deaths per 100.
ITALY	**7·5**	**3·70***	**2·99**
France	8·0	2·58	2·40
England and Wales	8·2	3·56	2·20
Scotland	7·2	3·52	2·21
Ireland	5·1	2·67	1·72
Austria	8·6	3·88	3·13
Germany	9·6	3·98	2·71
Spain	7·4	3·57	3·12
Belgium	7·3	3·21	2·32

* Notwithstanding the higher mortality, the classification of the population by age does not differ materially in Italy and England and Wales. According

Attention is now given in Italy to the causes of her high rate of mortality. The writer of a valuable paper* on the nosological geography of Italy, has shown that ordinarily the rate of mortality is lower in the northern countries of Europe than in the southern; lower in the western than in the eastern. In low-lying countries, subject to malaria, the mortality is generally high; in mountainous countries it is low. But instruction, civilisation, economic welfare, and sanitary measures greatly influence the rate of mortality, whilst the birth-rate has itself a direct influence upon the same. Thus, Sweden, Norway, and Denmark, Greece, Switzerland, and Roumania have each a low mortality, in consequence of their low rate of births; England, Scotland, Belgium, and Holland, have each a low rate of mortality in consequence of their economic progress, their civilisation, and the attention paid by them to the laws of health. Italy, Spain, Bavaria, and Austria have a high rate of mortality, partly in consequence of their high rate of births, and partly also in consequence of their high temperature, whilst their civilisation, economic welfare, and sanitary measures are not sufficiently advanced to neutralise the adverse causes which produce a high rate of mortality.

V.—*Illegitimacy.*

The proportion of illegitimate births in Italy is higher than in England and Wales. In 1879 the percentage in Italy was 7·26; whilst in England and Wales it was 4·8 per cent. To appreciate, however, justly the relation of illegitimacy to the state of morals, regard must be had to the condition of the marriage laws, the state of public opinion, and the rate of still-born. The abolition of the "rota" or foundling system, together with some difficulties experienced from the state of the marriage laws, are supposed to have

to Professor Rameri in the "Annali di Statistica" and the "Census of England "and Wales," the two populations were divided as follows:—

Age.	Italy.		England and Wales.	
	Number.	Per Cent.	Number.	Per Cent.
0— 25	13,464,401	50·23	12,425,686	54·54
25— 50	8,735,895	32·59	7,010,236	30·77
51— 75	4,230,764	18·80	3,035,896	13·32
75—100	369,601	1·38	310,367	1·36
Centenarians	402	—	427	—
Unknown	91	—	—	—
	26,801,154	100	22,782,612	100

* Geografia Nosologia dell' Italia. Studio del Dr. Giuseppe Sormani. "Annali "di Statistica," vol. vi, 1881.

contributed to raise somewhat the rate of illegitimacy in Italy of late years. In 1863 the proportion of illegimate births was 4·93 per cent. In 1879 it was 7·26 per cent. Illegitimacy was larger in the uneducated than in the educated provinces; in the urban than in the rural districts.

If we compare the rates of illegitimacy in different countries, it is evident that this fact alone cannot be taken as a sufficient indication of the relative state of morals. The rates were as follows:—

States.	Period.	Rates.	States.	Period.	Rates.
Austria	1865–78	13·50	Belgium	1865–78	7·08
Denmark	'65–76	11·05	**Italy**	'65–79	**6·47**
Sweden	'65–78	10·20	Spain	'65–70	5·53
Scotland	'65–78	9·26	England and Wales	'65–78	5·43
Germany	'65–78	8·67	Switzerland	'72–78	4·78
Norway	'65–78	8·49	Roumania	'70–77	3·79
France	'65–77	7·35	Holland	'65–77	3·49
Hungary	'65–77	7·09	European Russia	'67–75	2·87

VI.—*The Stature of the People.*

In Italy the average stature of conscripts is 1·65 metres (5 ft. 5 in.). The people are tallest in the Veneto, Liguria, and Lombardy; smallest in Calabria, Basilenta, and Sardinia. The stature required for the army being 1·56 metres (5 ft. 1 in.), the proportion rejected from 1846 to 1857 averaged 11·14 per cent. Of the total number examined, 4·5 per cent. were found to be under 1·51; 28 per cent. from 1·51 to 1·59 metres; 53 per cent. from 1·60 to 1·69 metres; 14 per cent. from 1·70 to 1·79 metres; and 0·5 above that stature.

VII.—*Education.*

Education was greatly neglected in Italy during former Governments: from the school to the university all educational institutions were then at the lowest ebb. Since the formation of the Italian kingdom, however, the number of unlettered and unable to sign the marriage register have greatly diminished. The proportions were as follows:—

Departments.	Number of Unlettered per 1,000 of the Population.		Per-centage Decrease.	Per Cent. of Marriages where neither Husband nor Wife could Sign their Names on the Marriage Register.		
	1861.	1871.		1867-71.	1877.	Decrease per Cent.
Piedmont	574	500	12	21·29	12·22	42
Liguria	708	622	12	34·34	21·64	36
Lombardy	599	528	11	34·96	22·72	35
Emilia	804	751	6	61·06	50·73	17
Umbria	859	826	3	60·06	53·40	16
Marches	851	816	5	62·49	58·33	6
Tuscany	778	724	7	45·84	38·85	15
Abruzzi	899	868	3	74·93	66·58	14
Campania	853	824	3	69·73	63·05	9
Puglia	886	865	2	80·91	76·34	5
Basilicata	912	898	2	85·61	78·93	7
Calabria	905	888	1	81·80	77·66	5
Sicilia	902	872	3	76·92	70·80	7
Sardinia	912	881	3	69·34	63·62	7
Italy	**781**	**729**	**6**	**56·61**	**48·58**	**14**

A proportion of 729 per thousand of unlettered, though based upon the total population, is very high, but the progress made in the number able to sign their names on the marriage register is most encouraging.

In comparison with England and Wales, the educational condition of Italy, as represented by the ability of males and females to sign the marriage register, is sad in the extreme.

Proportion per Hundred of Persons unable to Sign in 1879.

	England and Wales.	Italy.
Males	13·8	48·07
Females	18·5	70·24
Mean	16·2	59·16

Within the last ten years considerable efforts have been made to diminish as much as possible the enormous amount of national ignorance, and with the measures in operation it will not be long before a new state of things will be realised. The number of schools and scholars increased as follows:—

	1861-62.	1875-76.	Percentage of Increase.
Number of schools, public and private	29,422	47,411	61
Scholars, public and private	1,109,024	1,932,617	74
Teachers „	31,421	47,085	49

In 1875-76, whilst Italy had 7 children attending public and private elementary schools per 100 inhabitants, England and Wales had 8·7 per 100. There is still room, therefore, for further increase, and stronger measures are needed for securing regular attendance.

Secondary instruction has likewise made considerable progress, both in the character of the instruction and in the number of students. The technical institutes and schools are in many cases in a high condition of efficiency. There are twenty-one universities in Italy, some of which are of very ancient dates. In 1876-77, 3,314 students attended the faculty of jurisprudence, 2,812 the faculty of medicine and surgery, 1,257 the faculty of mathematical science and natural physics, 212 the faculty of philosophy and letters, and 1,123 other courses. But the most striking evidence of the increasing life of the people under free political institutions, is to be found in the increase in the number of public journals. The number and years of their foundation were as follows:—

Years of Foundation.	Number of Daily and Periodical Publications.
1797–1815	4
1816–30	4
'31–44	12
'45–60	62
'61–80	1,372
	1,454

Of these 1,454—149 were daily and 1,305 weekly or other periodicals. They included 560 political; 262 literary, scientific, artistic, and theatrical; 219 scientific, administrative, judicial and technical; 185 agricultural, industrial, and commercial; 78 religious and political religious; 89 humouristic, illustrated, and fashions; and 61 didactic and educational. In the United Kingdom there are understood to be 2,076 newspapers, and 921 other periodical publications; in all 2,997. While in Italy there was 1 newspaper and periodical publication to every 19,000 inhabitants, in the United Kingdom there is 1 to every 12,000 inhabitants.

VIII.—*Political Franchise.*

The franchise in Italy is as yet greatly restricted. With an approximate population, in 1879, of 28,438,000, there were in Italy in 1880 only 622,000 names on the electoral register, giving a proportion of only 2·32 per 100 inhabitants. In Great Britain and Ireland, with a population, in 1881, of 35,200,000, the number of electors is 3,038,000, or in the proportion of 8·63 per 100; and in France, with an estimated population of 36,977,000, the number of electors is 9,948,000, or in the proportion of 26·90 per 100. This undue restriction of the franchise in Italy has been the subject of

great discussion within the Italian parliament. The existing electoral law is dated 17th December, 1860, and by that law the right of voting is only enjoyed on condition (1) of citizenship, that is of being a native or naturalised Italian subject; (2) of having completed 25 years of age; (3) ability to read and write; and (4) payment of taxes of not less than 40 lires per annum. Besides those thus qualified to vote, there are sundry "fancy" franchises* in favour of members of academies, professors, laureates, barristers, &c., which, however, do not add materially to the number based upon the census. Several proposals have been made for extending the franchise, by the ministries of Nicotera in 1876, of Depretis in 1879 and 1880, and by two commissions, one presided over by Signor Brin, in 1879, and one by Signor Zanardelli, in 1880. In substance these recommendations did not go further than reducing the age from 25 to 21. There was no accord whatever in Italy in favour of universal suffrage. The common sense of Italian statesmen came out very strongly in the reports of the commission. The commissioners did not let themselves be carried away by sentiment. They did not advance beyond the limits of prudence. Their proposals were well guarded, and, whilst in favour of progress, they did not venture upon radical changes. Among the subjects which engaged the attention of the commission, was a demand made by Italian women to obtain a right to vote, a demand supported by petitions with 300,000 signatures; but the commission, after carefully weighing all the arguments in favour of and against the demand, declared their opinion against the same. "We, people of the Salic Law," the report says, "have always had a high conception of the mission of woman. In "ancient Rome, where more than anywhere woman felt herself a "citizen, and where she participated in the dangers, triumphs, "interest, and glory of the people; in ancient Rome, whose great "resolves were inspired by the highest veneration for the honour, "prestige, and purity of woman, the maximum praise of the "Latin matron, praise which was accepted and deserved by her "unrivalled heroines, was, '*Domi mansit, lanam fecit.*' Let us not so

* These "fancy" franchises number among others the following:—

Members of academies of science and art	14,557
Advocates, procurators, notaries	19,867
Holders of equestrian orders	36,468
,, medals of honour	12,950
Employés of public offices	67,504
Members of chambers of commerce	951
Doctors, surgeons, dentists, veterinaries, pharmacists	35,792
Engineers	6,823
Accountants	5,083
Brokers	24,807
Official liquidators	1,153

" ill reward woman as by dragging her into an arena where she " would lose her true dignity, her grace, her strength. That irre- " sistible force through which, as the poet said, she is able to soften " even iron and fire, she would not find either at the electoral " meetings, or in a senate of women, but rather in that omnipotent " empire which made the names of the wife of Themistocles, " the mother of Coriolanus, and that of the Gracchi for ever " immortal." *

IX.—*Finances.*

To a young kingdom as Italy, a sound system of finance was from the first absolutely indispensable, and she may be congratulated on having had in Cavour, Minghetti, Scialoja, and other finance ministers, not only earnest and diligent statesmen, but economists, who knew how to provide for the wants of the State, in as economical a manner as the circumstances of the nation would admit. No nation, indeed, can afford to neglect its public finances, for they are the pivot on which the economic condition of the country necessarily turns; they closely reflect the state of political relations, and they intimately affect the commerce and industries of the nation. The income and expenditure of the Italian States, previous to their union into one kingdom, in 1860-61, was as follows:—

States.	Income.	Expenditure.	Surplus.	Deficiency.
	£	£	£	£
Piedmont	13,647,640	19,285,040	—	3,637,400
Lombardy	3,231,760	2,097,760	1,134,000	—
Emilia	2,501,680	1,440,480	1,061,200	—
Marches	579,120	515,840	63,280	—
Umbria	358,360	213,920	144,400	—
Tuscany	1,734,800	2,307,640	—	572,840
Naples	4,377,200	4,019,760	357,440	—
Sicily	1,905,800	2,017,320	—	111,520
Italy	28,336,360	31,897,760	—	3,561,400

The debts of the different States were likewise of a very limited amount, as follows:—

* A new electoral law has been passed this year (1882), the principal feature of which is the extension of the right of voting to all men of 21 years of age complete, able to read and write; together with a variety of franchises to teachers, taxpayers, officers, &c.

States.	Redeemable.	Unredeemable.	Total.
	£	£	£
Piedmont	356,600	2,197,000	2,553,600
Lombardy	80,000	221,000	301,000
Emilia	9,400	—	9,400
Marches and Umbria	4,800	47,000	51,800
Tuscany	73,800	160,800	234,600
Naples	—	1,026,000	1,026,000
Sicily	14,200	272,000	286,200
Italy	538,800	3,923,800	4,462,600

The only State which showed a deficiency in the revenue was Sardinia; but the war against Austria in 1849, the bold step she took in joining the great Powers in the Crimean War, in 1856, and the war with Austria in 1859, account for her excessive expenditure. Most of the other States had a surplus; and their debts were likewise far from oppressive. All this, however, was changed on the formation of the Italian kingdom, for the exigencies of the State increased in proportion as her political aspirations were realised, and the people soon learnt that political privileges and rights must often be purchased and maintained at a great cost. The work of consolidating the finances of the State was by no means a light one. A different state of accountancy had to be introduced, an end had to be put to the many corruptions, briberies, and actual frauds previously practised with impunity on the public revenue, and a balance sheet had to be produced which should clearly exhibit the financial condition of the kingdom. A labour of such a nature, involving in many cases legal rights of enormous importance, was surrounded with grave difficulties, and was not easily accomplished. When completed for the year 1862, the income and expenditure of the new State was found to be as follows:—

Italy.	Income.	Expenditure.	Deficit.
	£	£	£
Ordinary	18,850,000	27,255,000	—
Extraordinary	4,039,000	9,586,000	—
	22,889,000	36,841,000	13,952,000

For several years the accounts were not made out in a strictly comparable manner; but from 1866, when a uniform system was adopted, the results were as follows:—

[000's omitted.]

Years.*	Income.	Expenditure.	Surplus.	Deficiency.
	£	£	£	£
1866	24,685,	43,543,	—	18,858,
'67	28,578,	37,144,	—	8,566,
'68	30,742,	40,574,	—	9,822,
'69	34,828,	40,783,	—	5,955,
'70	34,639,	43,230,	—	8,591,
'71	38,677,	41,638,	—	2,960,
'72	40,562,	43,905,	—	3,343,
'73	41,890,	45,450,	—	3,560,
'74	43,085,	43,620,	—	535,
'75	43,853,	43,298,	555,	—
'76	44,933,	43,315,	1,618,	—
'77	47,234,	46,317,	917,	—
'78	47,665,	47,083,	582,	—
'79	49,125,	47,433,	1,692,	—

* This table is taken from the Appendix to the "Project of Law" presented to the Chamber of Deputies with reference to the abolition of the forced paper currency.

It is evident from this table that the finances of Italy were severely strained for many years after the formation of the kingdom; and since the resources of the country did not admit of an excessive increase of taxation, a yearly deficit of millions of pounds was the natural consequence, resulting in a great increase of national indebtedness. The progress of the public debt has been as follows:—

[000's omitted.]

Years.	Irredeemable.	Redeemable.	Treasury Bonds.	Forced Currency.	Total.	Outstanding Debt, or Total, less Securities in the Treasury.
	£	£	£	£	£	£
1860....	84,920,	11,840,	800,	—	97,560,	97,490,
'61....	110,480,	13,200,	1,560,	—	125,240,	125,150,
'62....	111,520,	12,840,	9,080,	—	133,440,	133,390,
'63....	140,640,	12,640,	4,600,	—	157,880,	157,800,
'64....	163,280,	21,280,	7,360,	—	191,920,	191,680,
'65....	193,080,	20,800,	7,440,	—	221,320,	219,360,
'66....	214,640,	45,680,	6,840,	10,000,	277,160,	275,280,
'67....	221,880,	53,720,	9,400,	15,600,	300,600,	286,330,
'68....	220,040,	62,000,	10,480,	14,600,	307,120,	299,320,
'69....	221,160,	76,200,	10,800,	15,120,	323,280,	309,940,
'70....	241,800,	78,160,	10,640,	22,000,	352,600,	331,460,
'71....	246,920,	74,760,	9,160,	27,160,	358,000,	332,880,
'72....	277,560,	70,340,	5,300,	31,600,	384,800,	338,800,
'73....	283,680,	65,720,	7,320,	33,600,	370,320,	339,050,
'74....	289,360,	59,120,	7,800,	35,200,	384,480,	340,167,
'75....	297,840,	55,280,	6,640,	37,600,	396,560,	337,890,
'76....	309,080,	77,360,	6,720,	37,600,	430,760,	367,860,
'77....	313,320,	92,360,	8,480,	37,600,	451,760,	389,470,
'78....	315,780,	87,710,	10,450,	37,600,	451,560,	390,014,
'79....	322,720,	83,030,	8,303,	37,600,	451,050,	391,080,

It should be remembered, moreover, that over and above this

enormous increase of debt, the exigencies of the State have absorbed a large amount obtained from the appropriation and sale of real property, formerly held by ecclesiastical corporations. The law of 7th July, 1866, decreed the conversion of the annual value of the property of religious corporations into State obligations, and the law of 15th August, 1867, provided that such amount shall be so registered in the great book of the public debt. From those dates to 31st December, 1877, 2,179 religious corporations, and 34,852 other ecclesiastical bodies were suppressed; whilst 16,129 other religious bodies were allowed to remain, though their income from land became likewise converted into interest on the funded debt. Hence 53,152 religious bodies received from the State public securities in exchange for their real property, amounting to 1,238,000*l.* per annum, representing a capital of 36,000,000*l.* From the operation of this law were exempted the palaces and country residences of bishops, any building recognised as necessary for parochial purposes, and any property destined to works of beneficence and instruction. These being set aside, the rest was sold, and the proceeds paid to the State, the net value realised being 17,504,000*l.*

The debt resulting from the issue of inconvertible State notes is included in the amount already given. At the first the Government entertained the hope that they might be able to withdraw such notes by means of the proceeds of the ecclesiastical property, but such hopes were never realised. With the continuance of such notes in circulation, it became necessary to suspend also the obligation of the banks to keep a gold reserve for their circulation, and thus from 1866 the circulation of the national banks of issue, viz., the National Italian Bank, the Neapolitan, the Tuscan, the Roman, the Sicilian, and the Tuscan Bank of Credit, became altogether inconvertible.* The total paper currency in Italy from 1866 to 1879, and the premium on gold, were as follows:—

Years.	Notes of the Six Banks.	State Notes.	Total.	Premiums on Gold.
	£	£	£	
1866	14,498,000	10,000,000	24,498,000	5·47
'67	23,481,000	10,000,000	38,481,000	13·40
'68	25,028,000	11,120,000	36,148,000	5·62
'69	24,962,000	11,120,000	36,081,000	3·40
'70	22,014,000	17,500,000	39,814,000	5·30
'71	25,383,000	25,160,000	50,543,000	7·30
'72	27,621,000	29,600,000	57,221,000	11·15
'73	29,327,000	31,600,000	60,926,000	15·80
'74	28,085,000	35,200,000	63,285,000	10·80
'75	26,697,000	37,600,000	64,297,000	8·15
'76	28,074,000	37,600,000	65,675,000	8·80
'77	27,890,000	37,600,000	65,190,000	9·05
'78	26 891,000	37,600,000	64,491,000	14·90
'79	28,297,000	37,600,000	65,597,000	12·70

* The reserves held by the banks against their circulation from 1867 to 1879, have been maintained at an average rate of 45 per cent.

As soon, however, as the improved condition of Italian finances permitted it, the Italian Government took steps for the immediate withdrawal of the forced currency. In introducing the measure for this purpose in 1880, Senator Magliani, minister of finance, said: "Gentlemen, no great reform is ever made without opposition, and "often without danger. Even economic reforms cannot be accom- "plished without obstacles. We have foreseen every difficulty that "can possibly be anticipated, and in part they have been met and "removed. Any other difficulty which may yet arise we hope we "shall be able to overcome. But we must proceed in the execution "of this law with great prudence and caution. We feel the respon- "sibility which we assume, and we shall endeavour to fulfil our "duties in the best manner we can. We shall neither be too timid "nor too bold, but we shall have the courage of our convictions, "founded as they are on the study of all matters affecting national "economy and finance. We shall derive courage from the interest "we have in the public welfare, and we shall be ready to fight the "battle for the abolition of the forced currency, certain that it will "be a battle for economy. The merit, however, of its success will "not be due to us, but to the country, which is studying, working, "and advancing; for certainly without national progress any effort "for economy must prove a failure. That such progress will not be "wanting it is my firm conviction." The Government measure for the abolition of the forced currency having passed both Houses of Parliament, a loan was effected for the purpose, and cash payment was forthwith decreed, and is in course of being restored. A measure like this interested foreign countries as well as Italy, for the Italian funds are held extensively abroad. In 1879, of 2,464,000*l.* of interests of debt paid abroad, 80 per cent. was in Paris, 13·5 per cent. was in London, 2·3 per cent. in Berlin, and the rest in Vienna, Hamburg, Amsterdam, Frankfort, and St. Petersburg. The guarantees which Italy offers for the due payment of the interest of her public debt are her national bond, which she deems sacred; her national resources, capable of being largely developed, and a political and financial administration, systematic, faithful, and economic.

X.—*Taxation.*

The rate of taxation in Italy has been and is very high, and doubtless it constitutes one of the difficulties of the kingdom. Land and other real property are heavily burdened. The tariff is complicated, not only by the number and variety of articles subject to duty, but by the mode the duties are levied. The communal and provincial taxes not only add to the rates of taxation, but greatly aggravate their incidence. The customs duties, together with the octrois on articles of consumption, are in many cases most obstruc-

tive to trade and general intercourse. The wretched lotto produces to the Italian revenue a gross amount of about 2,700,000*l.* per annum, from which the amount won and heavy expenses of shops and agencies must be deducted, amounting to not less than 1,800,000*l.*, leaving probably a net receipt of 900,000*l.* This amount is contributed by the most ignorant portion of the kingdom, priestly aid and the grossest superstition giving to this species of gambling peculiar encouragement and relish. A revenue so obtained, and at such expense, does discredit to the Italian administration, and gives the lie to all their otherwise deserving efforts for promoting thrift and industry. The unpopular grist tax has been abolished. Who will be the Italian minister that will abolish the "lotto," and thus efface this grievous blot from the Italian escutcheon? What Italy requires in matters of taxation is greater unity and simplicity, less obstructiveness and vexatiousness in its collection. In truth, the taxes in Italy are not only very heavy in proportion to the population and resources of the country, but most expensive, and in many cases pernicious to her best interests. The principal branches of taxation in 1861, 1870, and 1879, were as follows:—

[000's omitted.]

	1861.	1870.	1879.
	£	£	£
Land tax	4,455,	5,901,	7,420,
Taxes on moveables	541,	3,670,	6,967,
Customs	2,597,	2,895,	4,659,
Tobacco	2,393,	1,657,	4,436,
Salt	1,318,	2,606,	3,262,
Stamps	871,	1,104,	1,600,
Octroi	636,	1,656,	2,792,
Succession duties	277,	718,	1,120,
Grist tax	105,	1,204,	3,236,
Railway receipts	—	232,	502,
Postages	438,	1,690,	1,100,
Telegrams	72,	207,	358,
Lottery	1,112,	3,226,	2,796,
Registration	832,	1,378,	2,140,

Taking the public ordinary revenue at 49 million pounds, and adding to it the provincial and communal taxes, amounting in all to 23,560,000*l.*, we may assume the total amount of taxation in Italy, in 1879, to have been about 73 million pounds, which, on a population of 28,400,000 gives a proportion per head of 2*l.* 11*s.* In the same year, 1879, in the United Kingdom, the revenue derived from public taxes was 70 million pounds sterling, and with the addition of local taxes, 29 million pounds, we have an aggregate of 99 million pounds, which, on a population of 34½ millions, gives a proportion per head of 2*l.* 18*s.* But though the taxation per head

in Italy is less than in the United Kingdom, widely different would be the result if we could compare their taxation with their respective annual incomes.

In Italy no estimate exists of national income. Such estimates have been made, more or less correct, in the United Kingdom, by Gregory King, Porter, Dudley Baxter, Giffen, and myself; in France, by Vauban, Vacher, and De Foville; in the United States, in connection with the census; but no statistician has yet ventured on such calculation for Italy. At the meeting of the statistical *Giunta* of 15th December, 1879, Professor Salandra called attention to the advantage of possessing some data for such estimates; and the result of the discussion was a request to the minister of finance to arrange the financial statistics in such a manner that they may become helpful to the scientific object proposed by Professor Salandra. Assuming an annual income in the United Kingdom of 1,000 million pounds sterling, a taxation, in round numbers, of 100 million pounds would give a proportion of 10 per cent. Assuming an annual income in Italy of 200 million pounds sterling, a taxation, in round numbers, of 70 million pounds, will give a proportion of 35 per cent. But it is to be feared that the income of Italy is even below any such estimate. In 1864 the gross amount assessed to income tax was not more than 1,740 million lire, or about 70 million pounds sterling. Even allowing for a very considerable amount of income not declared and understated, for a large increase within the last fifteen years, and for the wages, which, however low, must amount to much, the total income must be evidently exceedingly small, and the taxes become correspondingly very heavy. In the excellent report on the financial system of Italy by Mr. Herries, C.B., late Her Majesty's secretary of legation, he said, with reference no doubt solely to the British income tax, "An "Englishman having an income of exactly 100*l.* pays nothing; an "Italian pays on its equivalent, if on interest on capital 13*l.* 4*s.*, if "on profits of commerce 9*l.* 18*s.*, if on salaries 8*l.* 5*s.* A so-called "professional man in London, with an income of just 300*l.*, pays "on that amount, minus 80*l.*, a tax of 1*l.* 16*s.* 8*d.*; if he establishes himself at Rome he has to pay 24*l.* 15*s.*"* It is all important for Italy to realise that there is a limit to the power and willingness of the people to meet a heavy taxation, and that nothing is more likely to encourage dissatisfaction and disorder than an undue pressure from tax collectors. It is indeed to be hoped that the increase of the public and local expenditure by leaps and bounds is now at an end, and that the increasing prosperity of the people may render even present burdens lighter. A strict economy in all the branches

* "Reports by Her Majesty's Secretaries of Embassies and Legations, 1876," p. 549.

of expenditure is most important in Italy. It is useless for her to attempt to rival England in the construction or purchase of war ships.* The safety of Italy depends on the diminution of the taxes, which oppress the people, and render many of them discontented and rebellious.

XI.—*Public Expenditure.*

The largest item of the public expenditure in Italy is the interest of the debt. The relative proportion of the expenditure applied to the interest of the debt, the civil administration, and military purposes in Italy and the United Kingdom in 1879 was as follows. In Italy the proportion was 52·3 per cent. for interest of debt, 29·6 per cent. for the civil administration, and 18·1 per cent. for military purposes; in the United Kingdom 33·4 per cent. to the interest of the debt, 28·9 per cent. for the civil administration, and 37·7 per cent. for military purposes.

The national expenditure in 1861 and 1879 was as follows:—

[000's omitted.]

	1861.		1879.	
Ministry of Finance	11,845,	Treasury and Finance	32,230,†	
„ Justice	912,	—	1,115,	
„ Foreign Affairs	98,	—	253,	
„ Public Instruction	553,	—	1,097,	
„ Interest	2,489,	—	2,196,	
„ Public Works	5,244,	—	5,675,	
„ War	9,200,	—	7,540,	
„ Marine	1,815,	—	1,722,	
„ Agriculture	275,	—	331,	
	32,431,	—	52,159,	

The expenditure of the Ministries of War and Marine is not very large. Whilst in 1861 it amounted to 11,015,000*l.*, in 1879 it was 9,262,000*l.* But if the expenditure in money is comparatively low, in consequence of the low wages paid to all ranks, the expenditure in men is considerable. In 1861 the number actually in arms was 385,000, and the number liable to be called 95,000, total 480,000 men. In 1879 the number in arms was 164,000, and the number liable to be called 770,000, total 934,000 men. In 1861 the army demanded 19 per 1,000 of the population for the

* The first class armour-plated ship the "Duilio" cost 720,480*l.*; the "Principe Amadeo," 306,000*l.*; the "Venezia," 277,680*l.*; the "Roma," 242,400*l.*; the "Ancona," "Castelfidardo," "Regina Maria Pia," and "San "Martino," cost 184,000*l.* each.

† The payments made by these ministries include interest of public debt, pensions, and salaries, and most of what in the United Kingdom is paid out of the consolidated fund as distinct from voted supply services.

military service. In 1879 it demanded 33 per 1,000. Though the number in arms is comparatively small, the number liable at any time to be called to active service is very large, and it is the evil of the conscription that it interrupts practical professional apprenticeship; it discourages industry, and it engenders habits unfitting men for the harder tasks of life. Industry and militarism are in truth directly opposed to one another. It should be the aspiration of Italy to become a commercial and industrial nation.

The expenditure for public works is considerable. Large, proportionally, as is the unproductive expenditure, considerable sums have been expended during the last twenty years in works of the greatest utility. From 1861 to 1877, the following amounts were expended:—

	£
Roads	10,000,000
Harbours	4,700,000
Hydraulic works	5,700,000
Railways	55,000,000
Telegraphs	3,800,000
Posts	12,500,000
Public instruction	12,000,000
Total, 1861-77	103,700,000

XII.—*Agriculture.*

The tenure of land differs considerably in different parts of Italy.* In the hill regions of Piedmont the land is chiefly in possession of small and medium proprietors; in the fertile and irrigated plains, especially where the cultivation of rice is common, large estates are the rule. Upper Lombardy is divided into small properties, lower Lombardy into large estates. Farms held on the metayer system, or for a fixed rent in corn, are most common in central Lombardy, though in some cases direct leases for a money rent prevail, and for the large farms in the irrigated plain the rent is always in money. In the centre of Italy, the metayer system generally prevails, but

* The principal agrarian contracts in Italy are the "Mezzadria," by which the parties divide by half the produce of the soil. In most cases the "Mezzadro" owns the cattle, cattle sheds, &c., rents the fields for a given price, and provides, at his own charge, for their cultivation. 2. The "Terzaria," by which the cattle, cattle sheds, &c., belong to the master, or two-thirds are at his charge, and one-third at the charge of the "Terzario." The products are divided among them in equal proportions. 3. The "Affittanza," whereby the cultivation and the entire product, with all charges, are passed over to the tenant for a specific price. Such contracts are usually entered into for 3 to 9 years. 4. Lastly, the "Boaria," or "Schiavenderia," by which the owner passeth over to the "Boaro," in consideration of his labour, a certain quantity of produce and money, and the obligation on his part to execute certain works at the will of his master. This is usually an annual contract.

not so in the south. Everywhere the condition of the small tenants and labourers is exceedingly bad. An "Inchiesta Agraria" has just been commenced by a royal commission, under the presidency of Count Jacini, and in a memorandum prepared by him for the commission he put the commercial value of all lands in Italy at 960 million pounds sterling. Deduct from this 160 million pounds mortgage, there remains 800 million pounds, giving an annual income of 10 million pounds, divided among 5 million proprietors. The inquiry instituted by the royal commission extends to soil and clime, description of culture, disease of plants, special industries arising from plants, such as wine, oil, fruit, sugar, alcohol, &c.; animals and their products, industries derived from animals, such as dairy, wool, leather; systems of cultivation and rotation, irrigation, manures, agricultural machines, technical instruction, roads, real property, relation between the owners and cultivators of the soil, condition of agricultural labourers, &c. The agricultural statistics of Italy are useful as giving not only the number of acres under cultivation, but the average produce per acre in each cultivation. For Great Britain the agricultural statistics give only the acreage under cultivation. In Ireland the estimated average yield per statute acre of the principal corn crops and potatoes is given, a matter of considerable value in relation to the resources of the people. The following are the statistics of the area and produce in Italy in 1876:—

Crops.	Number of Acres under Cultivation.	Percentage of Total Surface.	Production per Acre.	Total Produce.
Wheat	10,316,000	14·09	13·8 bshls.	17,800,000 qrs
Indian corn	4,190,000	5·72	20·4 ,,	10,690,000 ,,
Rice	624,000	0·78	1·53 tons	965,000 tons
Rye and barley	1,148,000	1·56	0·57 ,,	658,000 ,,
Oats	985,000	1·34	0·74 ,,	731,000 ,,
Kidney beans, lentils	773,000	1·05	8·00 bshls.	858,000 qrs.
Beans	743,000	1·01	11·45 ,,	1,064,000 ,,
Potatoes	169,000	0·23	4·25 tons	692,000 tons
Hemp	329,000	0·41	0·29 ,,	94,000 ,,
Flax	200,000	0·27	0·11 ,,	23,000 ,,
Vineyards	4,619,000	6·59	129 galls.	597,000,000 galls.
Olives	2,223,000	3·04	55 ,,	123,000,000 ,,
Woods	9,031,000	12·34	—	—
Chestnuts	1,225,000	1·67	—	—
Arable land	26,937,000	36·95	—	—
Other lands	—	12·95	—	—
	—	100·00	—	—

A comparison of the average yield per statute acre of the principal corn crops and potatoes in Italy and other foreign countries as follows, given in the statistical abstract, show that much yet

remains to be done in Italy to bring her state of productiveness up to the level of other countries:—

Comparative Productiveness in Imperial Bushels.

Countries.	Date.	Wheat.	Barley.	Oats.	Rye.	Beans and Peas.	Maize.	Potatoes.
Italy	1874	12·3	16·0	19·7	—	10·1	21·6	109·4
France	1874	21·8	20·6	24·5	17·1	17·4	18·3	145·8
Austria	'75	12·5	13·5	16·2	13·2	—	21·6	109·4
Russia	'72	5·5	8·0	16·5	8·2	—	—	117·0
Sweden	'75	—	—	—	—	—	—	—
Norway	'76	22·1	30·3	35·7	25·9	20·5	—	—
Prussia	'76	20·7	26·7	33·4	18·2	—	—	—
Denmark	'76	31·8	31·6	33·5	27·8	21·2	—	120·0
Wurtemburg	'76	17·8	23·2	28·1	15·3	16·3	18·7	118·8
Holland	'75	26·3	44·3	45·6	19·6	21·1	—	166·6
United States	'75	11·0	20·6	29·7	13·0	—	29·4	110·5

Italy had in 1876, 657,544 horses, 498,766 asses, and 293,868 mules; 3,689,125 cattle, 8,674,523 sheep and goats, and 1,553,582 pigs. Both in the products of cereals and in the number of cattle and sheep Italy is immensely behind England and France. True, Italy produces rice, oil, wine, hemp, lemons, oranges, and many other articles for which England and France are not adapted; nevertheless Italy possesses special advantages in her splendid climate, and an unparalleled system of natural irrigation, which should favour a high rate of productiveness. The attention given to the subject will doubtless have the effect of greatly increasing the amount of agricultural wealth in Italy.

XIII.—*Minerals.*

Italy is not a mineral country, though she has some mineral resources. Thus tertiary lignite exists in central Italy, iron is found in the island of Elba and in Sardinia, lead and zinc in Lombardy and Sardinia, copper in Liguria, sulphur in the Romagna, Naples, and Sicily; but the total quantity extracted does not amount to much, the total production being about 600,000 tons per annum. The total value of the mineral production in Italy increased from 1,000,000*l.* in 1860, to 2,300,000*l.* in 1879, and the number of persons employed from 25,891 in 1860, to 44,215 in 1879.

XIV.—*Manufactures.*

Manufacturing industry is rapidly progressing in Italy, both in variety and amount. At the Milan National Industrial Exhibition last year the clearest evidence was given of the capacity of Italy to produce largely, and of the existence of skill and resources

inferior to no other countries. The great wants of Italy are capital and confidence, but both these are certain to be forthcoming as the political and financial condition of the country becomes more and more firm and secure from great perturbations. Even more, however, than the want of capital and confidence is the need of raising the great mass of labourers in Italy from intellectual and moral depression. Technical instruction may do much to increase the capacity of the directors of establishments, and to render those who manage large industrial works better able to avail themselves of the forces at their command, but they must be seconded by intelligent and reliable workers, strong alike in physical and moral power, able to cope with the difficulties and hardships of industrial labour. A comparison has been made by Professor Ellena of the proportion of persons employed in manufacturing industries in different countries, with the following results:—

Countries.	Census Years.	Total Population.	Population Employed in Manufactories.	Proportion per 1,000.
Italy	1871	26,801,000	3,287,188	122·70
England and Wales	1871	22,712,266	5,079,062	223·30
France	'72	36,102,921	3,647,724	101·10
Prussia	'71	21,639,851	3,040,897	123·50
Austria	'69	20,394,980	2,273,316	111·50
Hungary	'69–70	15,509,455	646,964	41·70
Belgium	'66	4,827,833	945,825	195·90
Switzerland	'70	2,669,147	489,059	183·30
United States	'70	38,558,371	2,528,208	65·60

The industrial statistics were as follows:—

Industries.	Men.	Women.	Children.	Total.	Proportion per 1,000 Persons.
Silk	15,692	120,428	64,273	200,393	7·15
Cotton	15,558	27,309	11,174	54,041	1·93
Wool	12,544	7,765	4,621	24,930	0·89
Flax and hemp	4,578	5,959	2,247	12,784	0·46
Cordage	5,838	787	1,775	8,400	0·30
Mixed materials	2,185	2,530	760	5,475	0·20
Felt hats	3,869	887	561	5,317	0·19
Leather	9,487	125	1,122	10,734	0·38
Candles	280	241	36	557	0·02
Extraction of oil	1,285	61	89	1,435	0·05
Soap	1,770	135	179	2,081	0·07
Paper	7,412	7,144	2,756	17,312	0·62
Railway	6,376	3	24	6,403	0·23
Tobacco	1,947	13,707	—	15,654	0·56
Government industries	14,741	1,405	466	16,612	0·59
	103,562	188,486	90,083	382,131	13·64

One of the most encouraging elements in the economic condition of Italy, and of great promise for its manufacturing progress, is the diminution of the rate of discount. Comparing the average rates charged by the principal banks of issue from 1861 to 1879, the following are the results:—

	Italian National Bank.	Bank of England.	Bank of France.	Bank of Austria.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.
1861–65.....	6·07	4·85	4·03	5·00
'66–70.....	5·31	3·56	3·07	4·54
'71–75.....	5·00	3·54	4·86	5·25
'76–79.....	4·68	2·93	3·08	4·41
Average....	5·26	3·72	3·76	4·80

A higher rate of discount prevails in Italy than in England and France, nevertheless the value of capital has diminished in Italy as in other countries—a clear evidence of the increase of capital. It should be remarked also, that within twenty years the average rates of wages have considerably risen, in many cases upwards of 20 per cent.

XV.—*Commerce and Shipping.*

The commerce of Italy is far from what it should be, situated as she is in the very centre of the Mediterranean, and with the Suez Canal rendering her once more the natural channel for the whole trade between the East and West. Would that Italy had now the mercantile spirit which animated the Venetians and Genoese of old. Would that she were no longer content to occupy so low a place on sea and land. Since the formation of Italy there has been some substantial increase both in the imports and exports, but the progress is insignificant in comparison with that of Great Britain and other countries. In 1861 the imports amounted to 37 million pounds, or 1*l.* 13*s.* per head. In 1879 the imports amounted to 53 million pounds, or in the proportion of 1*l.* 17*s.* per head, showing an increase of 12 per cent. In 1861 the exports amounted to 23 million pounds, or in the proportion of 1*l.* per head. In 1879 they amounted to 44 millions, or 1*l.* 13*s.* per head. In 1861 the total tonnage entered and cleared to and from foreign ports was 4,367,197 tons; in 1879 it was 8,202,537 tons. And the mercantile marine belonging to Italy, which in 1865 amounted to 678,000 tons, in 1877 was 1,068,000 tons. In 1879 there were in Italy 621 joint stock companies with an aggregate capital of nearly 80 million pounds. In like proportion are the railways and post office. In 1879 there were in Italy 8,230 kilomètres, equal to 5,111 English miles, of railway open, against 17,697 miles in the United Kingdom.

Whilst in Italy there were carried 30 million passengers, or 5,878 passengers per mile, in the United Kingdom there were carried in all 562 million passengers, or about 32,000 passengers per mile. In Italy in 1879 there were distributed 163 million letters and postcards, or in the proportion of 5·8 for every inhabitant; in the United Kingdom in the same year there were distributed letters and cards in the proportion of 36 per inhabitant. The truth is, that the progress as yet made in Italy has not permeated the masses. Let there be indeed a population of 28 million living enterprising and energetic Italians ready for the work before them, and what a revolution will be experienced in every branch of industry.

The general commerce of Italy since the formation of the Italian kingdom has increased as follows :—

[00,000's omitted.]

	Italian Commerce.						
	General Commerce.			Special Commerce.			Transit.
	Imports.	Exports.	Total.	Imports.	Exports.	Total.	Total.
	£	£	£	£	£	£	£
1862	36,4	26,2	62,6	33,2	23,0	56,2	32,0
'65	40,8	24,4	65,2	38,6	22,3	60,9	21,9
'70	39,8	34,2	74,0	35,8	30,2	66,0	39,6
'75	51,8	44,4	96,2	48,6	41,3	89,9	31,5
'79	54,0	48,0	102,0	50,5	44,2	94,7	38,8

A large portion of the commerce of Italy in Europe is with France, the United Kingdom, and Austria; but she has an extensive and increasing commerce with the United States and other North American, as well as with South American, States, and with Egypt, Tunis, Algeria, and Morocco. British commerce with Italy, however, has not increased as might have been expected. There was an increase in 1875, but the amount has decreased ever since. The total trade has been as follows :—

	Imports from Italy.	Exports to Italy.	Total.
	£	£	£
1861	3,080,000	7,023,000	10,103,000
'65	2,994,000	6,345,000	9,339,000
'70	3,844,000	6,293,000	10,137,000
'75	4,633,000	8,170,000	12,803,000
'80	3,380,000	6,333,000	9,718,000

A treaty of commerce between the United Kingdom and Italy was concluded 6th August, 1863, for ten years, and the duration

has been prolonged from time to time. Doubtless a new treaty will be concluded as soon as the negotiations with France respecting the treaty of commerce are finally settled.

XVI.—*Banking and Currency.*

Time was when Italian banking was in high reputation in Europe, when the Lombard merchants entered into large financial operations with European States, when the banks of Venice and Genoa afforded to commerce the greatest facilities. At present Italian banking must be content with supplying the wants of Italy, and her bankers have yet much to learn as regards those methods which have contributed so much to the economy of the currency in England and other countries. There are in Italy 6 banks of issue, with an aggregate capital of 12,260,000*l.*; 133 popular banks, with an united capital of 1,700,000*l.*; and 101 institutes of credit, with an aggregate capital of 10,772,000*l.* Besides these there are 12 land credit banks, with a capital of 456,000*l.*, and 8 credit foncié'r companies, with a capital of 4,745,000*l.* Before the abolition of cash payment, there were in circulation in Italy about 17 millions of gold, and nearly as much in silver, while the smallest bank note was for 20 lires or 16*s.*, of which 100,000*l.* were in circulation. But soon after the passing of the law of 1st May, 1866, gold being at a high premium, the precious metals vanished from the markets, and paper, much depreciated in value, took its place. For nearly fifteen years the exchanges on Italy were greatly depressed, and trade and finance alike suffered. But all this is now changed, and the monetary institutions are being placed on a solid basis.

XVII.—*Savings Banks.*

One of the most cheery evidences of progress since the construction of the new Italian Kingdom, is the increase in the amount deposited in the savings banks. In 1860 there were in Italy only 126 savings banks, having in all deposits of 6,288,000*l.* sterling. In 1879 there were as many as 3,838 savings banks, having an aggregate amount of 33,594,000*l.* sterling. In 1863 there were only 384,812 depositants; in 1879 there were in all 1,322,446. This is a most gratifying increase, and it is happily spread all over the kingdom. The savings banks in Italy are not so restricted in their investments as the British, and they employ their capital in real estates, public funds, loans to local governments, discounting of bills of exchange, or otherwise, as they may deem best. Considerable increase has also taken place in the number of friendly societies. In 1862 there were only 443 of such societies. In 1878 there were as many as 2,091, most of which of recent dates. Whilst the principal scope

of these societies is the help of sick members, some of them are energetic in providing for their members popular instruction especially evening schools for design, language, and accountancy.

Savings Banks.

Years.	Total Savings Banks Institutes.			Ordinary Savings Banks.		
	Number of Banks.	Number of Accounts.	Amount to the Credit of Depositors.	Number of Banks.	Number of Accounts.	Capital.
			£			£
1825	13	—	107,647	13	—	107,647
'30	17	—	194,571	17	—	194,571
'35	21	—	360,228	21	—	360,228
'40	33	—	758,122	33	—	758,122
'45	73	—	1,544,120	73	—	1,544,120
'50	86	—	1,601,223	86	—	1,601,223
'55	99	—	3,775,947	99	—	3,775,947
'60	126	—	6,288,201	126	—	6,288,201
'63	—	384,812	7,536,422	—	384,812	7,536,422
'64	—	404,839	8,001,313	—	404,839	8,001,313
'65	184	435,830	8,997,715	184	435,830	8,997,715
'66	—	427,830	8,988,514	—	427,830	8,988,514
'67	—	436,922	9,507,476	—	436,922	9,507,476
'68	—	475,452	11,061,801	—	475,452	11,061,801
'69	—	520,310	11,979,377	—	512,853	11,883,716
'70	345	583,133	14,104,261	249	571,217	13,924,843
'71	383	635,122	16,309,541	272	616,189	15,901,786
'72	420	703,940	18,614,372	283	676,257	17,860,534
'73	466	720,952	19,040,444	297	680,116	18,003,093
'74	428	767,584	20,915,418	310	705,189	18,684,792
'75	462	846,310	23,983,047	326	769,257	21,088,055
'76	—	—	—	351	833,760	22,110,179
'77	3,627	1,114,954	28,002,736	354	880,022	22,962,192
'78	3,766	1,189,829	30,705,779	357	886,947	24,087,330
'79	3,838	1,322,446	33,593,993	358	925,466	26,272,539

Years.	Postal Savings Banks.			Institutes of Credit Popular Banks.		
	Number of Banks.	Number of Accounts.	Capital.	Number of Banks.	Number of Accounts.	Capital.
			£			£
1869	77	7,457	95,660	—	—	—
'70	96	11,916	179,408	—	—	—
'71	111	18,933	407,754	—	—	—
'72	137	27,703	753,838	—	—	—
'73	169	40,836	1,037,350	—	—	—
'74	118	62,395	2,230,626	—	—	—
'75	136	77,053	2,902,989	—	—	—
'76	—	—	—	1,989	57,449	9,755
'77	183	120,638	4,781,985	3,090	114,294	258,558
'78	215	146,145	6,172,898	3,194	156,737	445,550
'79	221	158,740	6,297,331	3,259	238,240	1,024,122

XVIII.—*Crime.*

It is scarcely possible, with the different meanings attached to the nomenclature of crime in different countries, to institute any comparison of their criminal statistics, but doubtless the higher crimes, especially that of murder, are much more prevalent in Italy than in this country. In England and Wales the numbers committed for trial for murder average from 60 to 70. In Italy, in the years 1874-75, the number committed for qualified homicide was 792, and for simple homicides and unprovoked wounds, with subsequent death, 2,327. The number of persons committed in England and Wales for indictable offences was 16,370, in Italy 25,260, the proportion to population being 0·68 per 1,000 in England, and 0·89 per 1,000 in Italy. The number brought before the correctional tribunals for rebellion and violence against public authority is also large. In all respects the Italian criminal statistics exhibit graver features than the English, though the whole number of persons subjected to correction in proportion to population may probably be greater in the United Kingdom than in Italy. The number of suicides in Italy in 1878 was 1,158, or in the proportion of 41 per million persons. In England and Wales in the same year the number was 1,764, or in the proportion of 71 per million.

XIX.—*Statistical Organisation.*

The statistical organisation of Italy is very complete. Directed by a most accomplished statist, Signor Bodio, and guided by a Giunta, comprising men of high distinction, both as statesmen and men of science, the publications which emanate from that office are distinguished for their thoroughness and faithfulness. In such publications the evils which afflict Italy and the causes which retard her progress are exhibited in their fulness. Conscious of having much to learn from the experience and methods of legislation of other nations, the statistical commission is most vigilant in obtaining and arranging their facts in a scientific manner, so as to derive from them lessons of wisdom. The "Annali de Statistica" would do honour to any State.

XX.—*Economic Tests of Progress.*

By two very searching tests we may ascertain the true economic results of the formation of the Italian Kingdom. First, by its progress in population, revenue, and commerce in itself, and as compared with France and the United Kingdom; and second, by the value set on the Italian funds at the London Stock Exchange, also as compared with the French and British funds. The first of the two tables in the Appendix shows, that taking the condition of these

three kingdoms in 1861, as represented by 100: in population, Italy increased to 129, France remained as she was, and the United Kingdom increased to 120. In public revenue per head, Italy rose to 175, France to 223, whilst the United Kingdom fell to 98. And in commerce, taking the "special" only, per head of the population, Italy rose to 133, France to 188, and the United Kingdom to 129, showing distinctly that whatever progress Italy has made in population and commerce, the revenue has hitherto increased faster than either. The second table is still more interesting. The highest and lowest price of the Italian 5 per cent. in the London Stock Exchange in 1865, was $66\frac{1}{2}$ and 63, and in 1866 the highest and lowest prices were $65\frac{1}{2}$ and 35. But since then the value of Italian securities has risen gradually, till in 1881 the highest price was $93\frac{1}{4}$, and the lowest $85\frac{1}{2}$. As compared with French and British stocks the Italian 5 per cent. shows the greatest rise. In 1865, whilst Italian stock was quoted $66\frac{1}{2}$ and 63, French, 3 per cent., stock reduced to the same denominator of 5 per cent. was worth $115\frac{4}{5}$ and 110, and British consols, similarly converted into 5 per cent., $152\frac{1}{2}$ and $144\frac{1}{2}$. In 1881, whilst Italian stock* was quoted $93\frac{1}{4}$ and $85\frac{1}{2}$, French stock was at $120\frac{1}{2}$ and 113, and British consols at $171\frac{2}{3}$ and $163\frac{2}{5}$. According to the last quotations on the 2nd January, 1882, whilst consols, at present prices, yielded 3*l.* –*s.* 2*d.* per cent., and the French 5 per cent. rentes yielded 4*l.* 7*s.* 6*d.*, the Italian rente exchange 25 frs. 5 per cent. yielded 5*l.* 12*s.* 6*d.* There is room therefore for still further advance in the value of Italian stock, and it will be realised if only Italy succeeds in continuing free from internal feuds and external wars; but what has been achieved already is something marvellous and eminently gratifying.

XXI.—*The Future of Italy.*

Italy is as yet a young kingdom: she is only about to enter on her majority; and yet what advance she has made. How speedily she has taken a high place amidst the first powers in Europe. With the prestige of her former lustre in politics, in literature, in art, and science, with physical beauties unsurpassed, with a population capable of high refinement, and with a geographical position the most favourable, Italy has a future in prospect full of the brightest hopes and expectations. She is indeed apt to dwell too much on her former glories, for she has given birth to many masters of science and art, and she has many claims to the gratitude of the learned and the good. But she must secure the respect of nations by her constant advance. In the discipline of self-government, in the statesmanship of her rulers, in the stability of her institutions,

* The Italian coupons are subject to a tax amounting to 13·20 per cent.

in all that guarantees freedom, civil and religious; in the progress of manufacture and commerce, in the wisdom of her laws, and the unimpeachable character of her courts of justice; in the order and soundness of her finances, and in all that constitutes economic and intellectual advancement, Italy must ever move onwards. Let her succeed in avoiding wars, which would be her ruin; let her cultivate the arts of peace and commerce, and march in the van of social, moral, and intellectual progress, and she cannot fail to become ere long one of the most advancing and influential States—a pledge of tranquillity and strength among the members of the European family.

APPENDIX A.

Relative Progress of Italy, France, and the United Kingdom in Population, Revenue, and Commerce.

	1861.	1865.	1870.	1875.	1880.
	Population.				
Italy	21,700,000	25,000,000	26,000,000	27,500,000	28,400,000
France	37,000,000	37,000,000	37,000,000	26,500,000	37,000,000
United Kingdom	28,800,000	29,700,000	30,800,000	32,700,000	34,800,000
	Public Revenues (Ordinary and Extraordinary).				
	£	£	£	£	£
Italy	27,000,000	50,000,000	35,000,000	58,000,000	59,000,000
Per head	1*l.* 4*s.*	2*l.*	1*l.* 7*s.*	2*l.* 2*s.*	2*l.* 2*s.*
France	58,000,000	80,000,000	88,000,000	120,000,000	128,000,000
Per head	1*l.* 11*s.*	2*l.* 3*s.*	2*l.* 7*s.*	3*l.* 6*s.*	3*l.* 9*s.*
United Kingdom	71,000,000	70,000,000	75,000,000	75,000,000	84,000,000
Per head	2*l.* 9*s.* 10*d.*	2*l.* 7*s.* 7*d.*	2*l.* 8*s.* 4*d.*	2*l.* 6*s.* 3*d.*	2*l.* 9*s.* 8*d.*
	Imports and Exports (Special).				
	£	£	£	£	£
Italy	56,200,000	61,000,000	66,000,000	89,900,000	94,000,000
Per head	2*l.* 11*s.*	2*l.* 8*s.*	2*l.* 10*s.*	3*l.* 4*s.*	3*l.* 7*s.*
France	167,000,000	229,000,000	227,000,000	296,000,000	313,000,000
Per head	4*l.* 10*s.*	6*l.* 4*s.*	6*l.*	8*l.* 2*s.*	8*l.* 9*s.*
United Kingdom	318,000,000	378,000,000	459,000,000	539,000,000	497,000,000
Per head	11*l.*	12*l.* 14*s.*	14*l.* 18*s.*	16*l.* 9*s.*	14*l.* 5*s.*

Proportional Increase.

	Population.				
Italy	100	115	119	126	130
France	100	100	100	99	100
United Kingdom	100	103	106	113	120
	Revenue per Head.				
Italy	100	166	112	175	175
France	100	138	151	213	223
United Kingdom	100	96	97	92	99
	Commerce per Head.				
Italy	100	95	98	125	131
France	100	137	133	180	188
United Kingdom	100	115	135	149	129

APPENDIX B.

Relative Value of Italian, French, and British Stocks on the London Stock Exchange.

	Italian.		French.				British.			
	Five per Cent. 1861.		Three per Cent. up to 1871, and Five per Cent. afterwards.				Three per Cent. Consols.			
			Highest.		Lowest.		Highest.		Lowest.	
	Highest.	Lowest.	Three per Cent.	Equal to at Five per Cent.	Three per Cent.	Equal to at Five per Cent.	Three per Cent.	Equal to at Five per Cent.	Three per Cent.	Equal to at Five per Cent.
1865....	66½	63	69½	115⅘	66	110	91⅓	152⅔	86¾	144½
'66....	65½	35	70½	117⅔	62⅓	104	90¾	150⅝	84⅝	141
'67....	56	42⅞	70⅔	117⅔	65·1	108½	96¾	160⅔	89¾	149½
'68....	57¼	41¼	72	120	68·3	113⅘	96⅛	160	91⅞	153
'69....	57¾	51	73⅞	123·1	69⅞	116⅖	94¼	157	91¾	152⅘
'70....	60½	43	75¼	125·4	51	85	94½	157⅓	88¼	147
'71....	68½	53	57	95	49	81	94	156⅔	91⅜	152
'72....	69½	64	—	91*	—	80*	93⅜	155⅝	91¼	152
'73....	66¾	55½	—	92½	—	82	94	156⅔	91⅝	152¾
'74....	68¼	58	—	100	—	91	93¾	156¼	91½	152
'75....	73½	65⅝	—	105⅞	—	99¼	95⅝	159½	91⅞	153
'76....	74½	66⅓	—	106¾	—	101⅝	97¾	162⅓	93⅜	155⅔
'77....	74⅝	62¼	—	103¼	—	101	97⅝	162¼	93	155
'78....	77	67½	—	115¾	—	106⅝	98	163⅓	93⅝	156
'79....	82	73	—	117⅝	—	108	99⅝	166	94⅞	158
'80....	87¾	78⅞	—	119	—	114¼	100¾	167⅘	97⅜	162¼
'81....	93¼	85½	—	120½	—	113	103	171⅔	98¼	163⅔

* From 1872 the 5 per cent. quotation was taken.

Discussion *on* Professor Levi's Paper.

Mr. H. Moncreiff Paul, after stating that though we were apt to consider Italy as a country for which God had done much and man little, Professor Leone Levi had shown conclusively that she had elements of progress, for which much might be expected in the future. Referring to the topographical advantages which the Professor had stated were possessed by Italy, he (the speaker) fancied that as the result of her peculiar shape there were also attendant disadvantages. Italy possessed length without breadth, and her large seaboard would involve her in enormous expense for defences in the event of war; while her ports were necessarily numerous, there could not be that concentration of business and economy in conducting it, which a more squarely-shaped country enjoyed. He was

glad to see allusion made in the paper to Italy's financial progress in the money markets of the world, but he did not think that the comparison of her stocks with those of England and France therein made, was quite fair, and for this reason, Italian stock yielded on an average 5 per cent. to the lender, and therefore attracted a class of investors who were debarred from lending on consols and French stock, as these securities would not yield so high a rate. The same argument held good in the case of colonial stocks, and for example those of Victoria and South Wales, bearing 5 per cent. interest or over. The advance on these since their issue had been even more marked. Statistics of the export trade between this country and Italy during the past three years, are found to be satisfactory. Thus in 1879 Italy took of our coal 1,400,000 tons; in 1881, 1,700,000 tons. Of cotton yarn and twist, in 1879, 12 million lbs.; in 1881, 21,600,000 lbs. Of cotton manufactures, in 1879, 68 million yards; in 1881, 95 million yards. Hence Italy is an increasing customer, and we ought to do all in our power to encourage her progress. Referring to the question of the renewal of the commercial treaty with Italy, the speaker said that in the event of the treaty negotiations now pending between France and Great Britain not resulting in the conclusion of a new treaty on a mutually satisfactory basis, it ought to be borne in mind that the importation of wine from Italy to this country, would become in the future a greater factor than in the past. With reference to the yield of cereals, he was sorry to see that of wheat, per acre, much lower, having regard to sun power and moisture with which Italy was favoured, than it ought to be. In this there was great room for improvement, by the introduction and application of better appliances for husbandry. No allusion had been made directly in the paper to the currency question with regard to Italy. It was, however, noteworthy that during the past year the demand for gold for Italy, after the floating of the last loan, had had a sensible effect on the money markets of London and Paris, showing that Italy being now alive to the necessity of possessing a gold currency, was making arrangements accordingly.

Mr. Denny Urlin, after remarking that his interest in Italy had been deepened by his experiences during a journey through some portions of that country, proceeded to refer to the rate of mortality as given in the paper read. He had been much struck in Italy by the singular scarcity of middle aged people in the streets, and he scarcely remembered seeing a really old Italian. There was reason for supposing that medical science was at a very low ebb in the country; if so, this partly accounted for a high rate of mortality. He thought that it must be some consolation to the learned Professor, who had left the land of his birth, to feel assured that in this less attractive region he had a much better prospect of attaining to old age. He had been much struck with the number of soldiers to be seen everywhere—on the railways and in the streets: and he might remark here that the Professor had not told them the extent of the army, which would have been interesting. Italy appeared to be bestowing too much attention upon military and

naval armaments. The taxes of all kinds in Italy were terribly high, and though the Professor felt a just pride when he spoke of the unification of Italy, yet if he (Mr. Denny Urlin) happened to be a native of Tuscany, he would rather have remained in his old condition, under the mild sway of a grand duke, than be unified into a new, glorious, but terribly over-burdened country, which was disproportioned to the size and wealth of Italy. The Italian national debt was largely held by French and English holders; and the Professor had omitted to mention that the coupons of Italian bonds had a peculiarity in being heavily taxed, so that the investor who was unaware of this special taxation, had his income trenched upon to a serious extent—about $12\frac{1}{2}$ per cent. per annum on the interest. The speaker remarked, in conclusion, that although one of the tables at least showed some inaccuracies, which required attention and amendment, he fully agreed that the paper was singularly instructive and well arranged.

Mr. E. J. Pearson said: I should be glad if I might ask one or two questions. It only occurred to me that regarding the comparison of taxation, what is with us local taxation, in Italy is included in the general taxation, except as regards the towns, if I am not mistaken. The *octroi* is the principal exception. The Government supply funds for roads, bridges, and so on, and the banking of rivers and various other expenditures, which is charged to local taxation in this country, and therefore the comparison of taxation, as I understand it, seems to be a little hard upon Italy: and Professor Leone Levi seems to be anxious to put Italy in a favourable light. The question of local taxation in this country is rather a burning one; but I do not think there is much local taxation in Italy, except as regards the *octroi*. Also the Professor said that Italy should grow corn. It seems to me that at the present price of the corn which she could import from abroad—Russia or America—it would not pay her to grow it for exportation. She might grow rice and other products, and wine, that would pay her better; but hardly corn, though I speak under correction. Another question I might merely refer to, speaking of the Italy of 1861, does that include the whole of Italy? because it is a little unfair upon Italy to say that she was then below other countries, when practically Italy was non-existent; and that must necessarily put her in an invidious position in regard to comparison with other European countries. I venture to make these remarks, because I have been much interested in Professor Levi's paper, and because, as far as I have seen Italy, I admire the Italians. In England, I think, we a little misunderstand Italy, and do not always appreciate her perhaps as we ought to do.

Mr. Francis Jourdan would like to ask the Professor in what way he had reduced the different results given us into pounds sterling. Unless the variations in the exchanges had been taken into account, some of these results would require to be reconsidered. For the last fifteen years the premium on gold had been nearly 10 per cent., and if the Professor's tables had been calculated at

par, or 25 frs. per *1l.*, some of his conclusions might no doubt be affected. This might be the explanation of what the Professor had said was the case, that the values of the imports into Italy from England did not appear to correspond with what they appeared to be in this country. He rather thought also that in stating that the Italian stocks yielded interest of *5l.* 12*s.* 6*d.* per cent. at present price, the Professor must have omitted the tax, which was a little over 13 per cent., and this would lower the interest yielded in the same proportion. They, as the Statistical Society, ought to be very careful in giving figures to the public, that they were strictly accurate. Mr. Jourdan then remarked on the inconvenience and loss arising from the large amount of inconvertible paper currency in existence, and said that a most favourable feature in regard to Italy was that measures were on foot for redeeming that currency, and making it exchangeable at par with bullion.

Mr. Rowland Hamilton would have liked, as adding to the value of the paper, some data in which the taxation applied to productive purposes might be distinguished from that spent unproductively. A friend of his, who had lived much in Italy, expressed very strong opinions about the weight of taxation in Italy, which was applied to a great extent to municipal purposes. He had lately read an account of the disease (*pellagra*) from which the northern parts of Italy suffered, through the people being reduced to live on unripened grain of the worst description. Any light thrown on such questions, would be most interesting to all who took any concern in this new addition to the European family of nations.

Sir R. W. Rawson, K.C.M.G., said: with reference to the last point raised, I would say there is a report in a recent number of the "Annali di Statistica," of the character and amount of the food consumed in each of the provinces, or in most of the provinces of Italy. It is a very detailed one, and there is a most interesting account there of the description and quantity of food so consumed. I am not aware that a similar document exists with regard to any other country. One or two remarks have been made in regard to the military, also as to the absence of old men. What struck me exceedingly last year in Florence and the north of Italy generally, was the extraordinary number of cases of dwarfs and deformed persons to be met with. You could not take half an hour's walk without seeing them. In one mile's walk I once counted five, and in talking to medical men on the subject, they attributed it to the food consumed, its scarcity, its uniformity, and the bad nature of it. With reference to the military, I think it is likely that the gentleman who spoke of their swarming everywhere, very possibly was travelling during the season in which the troops were moving about, and going from one place to another for exercise. There is much active movement among the military in Italy. I would not say that the Italian army is out of proportion to the population, but I do think it to be out of proportion in regard to the finances and actual condition of the country; and I am grieved to see by

the latest accounts, a large increase in the annual conscription. I do not exactly remember the figures, but it is in the proportion of 15,000 being increased to 75,000, *i.e.*, the annual drain is to be increased fivefold—that is either yesterday's or to-day's news. So far from the Government profiting by the continuance of peace and the consolidation of the kingdom, it is shown in the documents from which Professor Leone Levi has quoted, that the military charge is continually increasing, which means a greater burden on the people, a heavier drain of men, and greater expenses of maintenance. As regards the expense of maintenance, the pay of the officers and men is so trifling, so very small, that that will explain how it is that the pounds, shillings, and pence do not appear greater compared with the number of troops. The pay is *wonderfully* small. An officer there has to maintain himself and supply his uniform for some 45*l.* a-year—something very small indeed. But it is a terrible drain. During three or four months two servants were taken out of the places in which I was living, to service. There is a constant drain upon the population for the army, and there appears likely to be a large increase. The Professor might perhaps tell us what steps have been taken as to the redemption of the paper money, and to what extent it has been withdrawn. In June of last year that was to have been commenced, but there appears to have been some delay in the matter; and although I have seen that at different times the markets of Paris and London have been affected by withdrawals of gold for Italian purposes, I have not heard to what extent the paper money has been actually withdrawn. Fortunately for Italy the exchanges have fallen to par. To English travellers and residents drawing funds from England, it has been a very serious loss indeed. Many men living in Italy have had their incomes seriously diminished—to the extent of 13 or 14 per cent., and it came on so suddenly and advanced so rapidly, that the public were quite unprepared for it, the change being completed within three months.

Cavalier Giuseppe Buzzegoli, the Italian Vice-Consul in London, said: I have been delighted to hear such an interesting lecture on the economical growth of our country. No doubt one of the great obstacles which prevent the increase in wealth and industry and commerce is the heavy taxation. I have been many years in this country, but from friends, and my own experience, when about two years ago I was there, I find that in some provinces the taxation amounted altogether to between 45 and 50 per cent. of income, including all taxes, municipal and local; and this is one of the reasons why agriculture in the country, which ought to be more prosperous, is for the present not so flourishing as it ought to be. You will be glad to hear that there is just now a Government commission sitting on the question of establishing schools of agriculture, which no doubt, properly spread over the country, will do a great deal to help in the progress we must look for if Italy is to maintain the high position which she ought among the other European powers. Every Italian is alive to the great necessity there is of increasing the productive power of the country, both industrially

and commercially, in every respect; and I can assure you there is a stirring movement going on, a desire on the part of all classes—from the highest to the lowest—to do something to help on such progress; but, as you may suppose, such things cannot be completed in a moment, it is the work of long years; and one generation will not suffice to bring about the proper development of the great resources of the country. Unfortunately the highest classes, as yet, have not been up to the mark in helping and stimulating this result. In consequence of the want of technical education in times past, they have not up to the present, generally speaking, been in the front at doing what they could to improve their own lands, and to improve the conditions, moral, physical, and intellectual, of the lower classes, by example, by exertion, by knowledge, by everything in fact; but I hope that in a comparatively short time all this will disappear from Italy. With reference to the observation as to the age at which the soldiers enter into military service, I may say that they enter at the age of 21 years. Though no doubt the army is comparatively large, the expense is not so great in proportion; and up to the present, and for a certain period to come, the military situation is such that the army forms the backbone of the country; it establishes its unity, and blends the various elements of the country together into one; and in cementing that unity, it influences the formation of the Italian character as it at present exists. I am sorry I am not prepared with any formal remarks, and that my English is not so good as it ought to be. I do not think I can add more, except to thank the Professor for his able and interesting paper.

Professor Leone Levi, in reply, said: I am greatly obliged for the opportunity of answering some of the criticisms offered. As regards the questions of territory and population, I have taken Italy as she was at the different periods. Thus in 1862 Italy did not comprise the Roman States, whereas now she does, hence the population changed by nearly 3 millions in consequence. The various questions concerning the currency have not been discussed at length, because they would have required a paper of itself; but the leading facts are embodied in the paper. I have uniformly calculated 25 frs. to the *l.* At one time the exchanges were 10 per cent. and more against Italy, now they are nearly at par. The tax charged on coupons should be taken into account, but it does not affect the quotations of the Italian funds given. The prices on the Stock Exchange were taken from the "Economist and Investors' Manual." The army is not an element of production, but destruction, hence I have not taken it into account. It is indeed one of the most extraordinary evils of Italy. In the "Almanac de Gotha" of the present year, the number of the permanent army is given at 736,000, moveable militia 282,000, and territorial militia 701,000, giving a total of 1,719,000 men, a state of things simply disgraceful. Even admitting that a large portion of this army only represents what Italy might muster in case of necessity, and does not constitute an actual withdrawal from the business of production, there is a great evil in making so many liable, at a moment's notice, to leave their

useful avocation in order to join the army. The military expenditure has been spoken of as comparatively small, and so it is. The expense for the Ministry of War in 1861 was 9,200,000*l.*; in 1879 only 7,540,000*l.* The expense of the Ministry of Marine in 1861 amounted to 1,800,000*l.*; in 1879, 1,722,000*l.* Considering that in this country the army expenditure amounts to 16 millions for a much smaller number—9 millions for such an army as Italy musters, must allow for a very low rate of wages. But by far the greatest tax upon Italy and France, and all countries, arising from large armies, is that whereby the best life blood of the country is turned from productive to non-productive employment. I am sorry to say that the whole of the communal and provincial taxes, as I have stated, must be added to the public taxes, and not only the *octroi*. If, as our friend stated, the taxes in Italy amount in some parts to 40 or 50 per cent., it is because they include the entire amount of the communal and provincial taxes. But a large portion of these taxes may be said to be productive, being applied to sanitary measures, public works, instruction, &c. I hope a new treaty of commerce will be shortly concluded with Italy: at present a very large portion of Italian wine is sent from Italy to France, and thence to England. There is no reason why Italy should not have a much larger direct trade with England, and a treaty of commerce will doubtless be concluded on liberal terms on both sides. I do not agree with the opinion that it would have been preferable for Italy to remain divided, with less burdens, to being united, with heavy burdens. It has been far far better for Italy to have become free, and in a manner compelled to strive hard by heavy burdens to retrieve for herself a position of affluence and progress, than to have remained low, very low in the scale of nations, and comparatively unproductive. I have nothing further to add, except my obligation to the different speakers for their kind appreciation of the paper.

Tonnage Statistics *of the* Decade 1870-80.

By John Glover, Esq.

[Read before the Statistical Society, 21st February, 1882.]

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I.—*General Observations.*

The following paper is submitted to the Society in continuation of communications which I had the honour of making on the progress of shipping during the two previous decades. That for 1850-60 was read before the Society in June, 1862, and appears in the *Journal* for March, 1863. That for 1860-70 was read before the Society in May, 1872, and appears in the *Journal* for June, 1872. These, with the present paper and its accompanying tables, showing the progress of shipping between 1870 and 1880, will, I hope, secure a permanent historical and statistical record in our *Journal* of the course of English maritime enterprise since the repeal of the navigation laws, which can hardly fail to interest and be useful to subsequent inquirers on the same subject, and may possibly help in the education of citizens of other States which have not yet ventured on free trade in carrying. It is doubtful whether any of the great economic changes of the last forty years have so completely written into our public records the confutation of its opponents, and the justification of the philosophers and statesmen who were responsible for it, as the repeal of the navigation laws has done. It was said that we were giving all our maritime advantages away for nothing; that we should ruin our flag, make the Certificate of British Registry not worth the parchment on

which it was written, and so, acting like prodigals, that we should soon be in want. The tables I have the honour to submit to-night show that we have increased by scattering abroad; and that what we lost is totally insignificant compared with what we have found through the simple process of repealing the unwise interference of our ancestors, and leaving the trade in carrying to proceed on the basis of economic liberty, instead of the mere political distinction involved in the flag carried at the masthead.

To make such observations in this room, and to the Fellows of this Society, is, I well know, a work of supererogation, but the doctrine on which our nation has acted is so far from yet being generally believed or acted upon, that the two leading States in the world next to our own, viz., France and the United States, still act, and, in the case of France at least, are extending their action on lines exactly opposite. Restrictions of certain trades to the national flag in America; the French *surtaxe d'entrepôt*, by which, in an indirect but very effectual way, imports are made most difficult, otherwise than direct from the place of production, and indirect trade nearly impossible; and the quite recently enacted bounties on the construction and navigation of ships under the French flag—all show how slow and limited is the progress of the opinion that carriage by sea should be free from all political considerations, and regulated solely by economical. It is therefore matter of most legitimate satisfaction that our navigation returns continue to show that we have made no mistake, and supply no reason for us to change our policy, seeing that they confirm and verify it whatever test may be applied to them. I need not add therefore that whatever nation changes its maritime policy it is not likely to be ours. The errors of our neighbours are matters of regret for us, at least, and sometimes of loss. A shortsighted view might lead to the opinion that if we are acting on sound principles and they on unsound, we shall profit by their errors. To some small extent we may do so, but the larger operation of such action is injurious alike to the State directly concerned, and to the other nations which cannot help dealing with it. Moreover, the scale on which nations trade is kept low by economic fallacies, and the larger development which follows free trade is retarded, and for the generation which either enacts or keeps the restrictions is permanently lost. The recent action of other States in maritime matters will, I hope, be sufficient justification for these observations.

In directing the Society's attention to the following tables I may point out the advantage which appears to lie in occasionally looking at our great industries through the longer interval supplied by a comparison of decades, rather than the ordinary comparison of following years only.

The annual returns of trade and navigation are so full as to leave little to be added as records of the year. They reflect great credit on the department whence they issue. In 1881 they were supplemented by a return, dated 10th March, showing the progress of British merchant shipping from 1840 to 1880, and containing a large amount of information regarding the tonnage of foreign States, to which I have been under great obligation in the preparation of this paper.

As to the general character of the period, there was no maritime war during the decade 1870-80; consequently no such disturbance of shipping as that produced by the war between the United and Confederate States in 1865; but the Anglo-German, Russo-Turkish, Ashantee, Zulu, and Transvaal wars, and the war between Chile and Peru, are quite sufficient to prevent the decade being described as by any means peaceful. But there was no maritime war of any importance. Our flag was never belligerent. The demand of tonnage for the transport of troops was never of such magnitude as to occasion the slightest disturbance in the freight market, which consequently remained for the most part under no other than ordinary commercial influences; and as all the wars in which we were engaged were distant, and with nations already more or less subject to us, they cannot be said to have involved any very serious consequences on the trade of the decade. This is apparent from the fact that our exports and imports steadily grew from 375 millions in 1860 to 547 millions in 1870, and to 697 millions in 1880: in other words, the value in 1870 was nearly 46 per cent. over 1860, and the value in 1880 was nearly 86 per cent. over 1860. Of course, such an increase in value meant an enormous increase in the bulk of commodities imported and exported; an indication of which is shown by the returns for certain leading articles enumerated in—

Table I.—*Showing the Quantities of certain Articles Exported and Imported in* 1860, 1870, *and* 1880.

	1860.	1870.	1880.
Exports—			
Coals ..... tons	7,321,832	11,702,649	18,729,971
Iron and steel..... ,,	1,442,045	2,825,575	3,792,993
Salt ..... salt tons	696,725	764,707	1,051,240
Imports—			
Corn ..... cwts.	52,000,000	74,103,513	134,172,530
Rice..... ,,	1,535,575	4,077,468	7,889,710
Wool ..... lbs.	148,000,000	263,250,499	463,508,963
Wood ..... loads	2,727,000	4,460,710	6,430,021
Sugar ..... cwts.	8,817,277	15,304,918	20,654,988
Pyrites..... tons	93,889	411,512	658,047
Guano ..... ,,	141,435	280,311	80,497
Petroleum ..... galls.	490	6,859,385	38,793,371
Oil seed cake ..... tons	—	158,453	241.157

A very careful estimate of the tons of goods imported and exported, made by my able friend, Mr. John Williamson, of Liverpool, and communicated by him to the Chamber of Shipping of the United Kingdom, seems to justify the opinion that the increase in all articles was from about 30 million tons in 1870 to 53 million tons in 1880. The increase between 1879 and 1880 alone was estimated by the same gentleman at more than $7\frac{1}{2}$ million tons. Table I indicates the large growth between 1860 and 1870, but shows also, not merely that that was maintained, but such a further increase, as would be scarcely credible were it not vouched for by the public returns. I direct attention only to a few articles. Coal rising from 7 millions in 1860 to nearly $11\frac{3}{4}$ millions in 1870, and nearly $18\frac{3}{4}$ millions in 1880. Iron and steel exports from nearly $1\frac{1}{2}$ in 1860 to nearly 3 millions in 1870, and $3\frac{3}{4}$ millions in 1880. The corn import, $2\frac{1}{2}$ million tons in 1860, nearly $3\frac{3}{4}$ million tons in 1870, but in 1880 nearly $6\frac{3}{4}$ million tons. Wool, wood, and sugar indicate equally remarkable increase; whilst petroleum, of which we seem to have imported under 500 gallons in 1860, has become a trade, the proportion of which may be measured by saying that in 1870 it was under 7 million gallons, but in 1880 was not far short of 39 million gallons.

Such gigantic movements of commodities measure the extent to which the ocean highway is utilized, and prepare us for the vast development shown in the navigation returns.

TABLE II.—*Showing the Total Entries and Clearances at Ports in the United Kingdom in the Years* 1850, 1860, 1870, *and* 1880.

Year.	Tons.	Increase.	Increase per Cent.
1850.....	39,634,326	—	—
'60.....	58,707,102	19,072,776	48·12
'70.....	73,198,124	14,491,022	24·68
'80.....	133,250,391	60,052,267	82·04

I do not attach so much importance to this as to my other tables, because there appears to be some doubt regarding the coastwise figure which it includes. Either the figure for 1880 is overstated through some coasting entries occurring twice, or, I think, the coasting items for the earlier years are wrong. I was prepared for a very large increase in 1880, but not to find that 73 millions had become 133 millions. I therefore shall not lay stress on this table.

TABLE III.—*Showing the Total Tonnage Entered and Cleared at Ports in the United Kingdom, in the Foreign Trade only, in* 1850, 1860, 1870, *and* 1880.

Year.	Tons.	Increase.	Increase per Cent.
1850.....	14,505,064	—	—
'60.....	24,689,292	10,184,228	70·21
'70.....	36,640,182	11,950,890	48·40
'80.....	58,736,063	22,095,881	60·30
The increase between 1840-50 was			53·67
„ '30-40 „			62·76
„ '20-30 „			9·89

It will be observed that while the increase in our foreign trade was over 11 millions between 1860 and 1870, 1880 shows an increase of 22 millions over 1870. Since 1850 the foreign entries and clearances have more than quadrupled, and the last decade very nearly doubles the increase of its predecessor.

In Table IV the vessels entering or clearing in the foreign trade in ballast are omitted, but the omission does not in any important degree lessen the result.

TABLE IV.—*Showing the Tonnage Entered and Cleared in the Foreign Trade, with Cargoes only, in* 1850, 1860, 1870, *and* 1880.

Year.	Tons.	Increase.	Increase per Cent.
1850.....	12,020,674	—	—
'60.....	20,837,918	8,817,244	73·35
'70.....	31,624,680	10,786,680	51·76
'80.....	49,678,950	18,054,270	57·08

Table V I am able to use only for its own indication of the extent of the coasting traffic in 1880, not for comparison with the previous decades, and for the reasons indicated in my remark on Table II. Even so, however, its testimony to the magnitude of our coasting business is most important. Railways have probably done their best and worst as against sea coast traffic by this time, but the traffic coastwise goes on increasing, after making the most ample deduction for the omission of clearances in ballast from the earlier decades.

TABLE V.—*Showing the Total Tonnage Entered and Cleared Coastwise.*

Year.	Tons.	Increase.	Increase per Cent.
1850.....	25,129,262	—	—
'60.....	34,017,810	8,888,548	35·37
'70.....	36,558,042	2,540,232	7·47
'80.....	74,514,328	37,956,286	106·55

Returning to the foreign trade, and distinguishing in the entries and clearances those of vessels with cargo and in ballast, we inquire what is the position of the British flag therein? This is shown in—

TABLE VI.—*Showing the Amount of British Tonnage Entered and Cleared, with Cargoes only and in Ballast, from and to Foreign Countries and British Possessions.*

Year.	With Cargoes only.			With Cargoes and Ballast.		
	Tons.	Increase.	Increase per Cent.	Tons.	Increase.	Increase per Cent.
1850	8,039,308	—	—	9,442,544	—	—
'60	12,119,454	4,080,146	50·75	13,914,923	4,472,379	47·36
'70	22,243,039	10,123,585	83·52	25,072,180	11,157,257	80·18
'80	35,885,868	13,642,829	61·37	41,348,984	16,276,804	64·91

From this it appears that the increase in the last decade exceeds any previous increase; indeed, the increase in 1880 over 1870 exceeds the whole entries and clearances with cargo in 1860 in the foreign trade.

Table VII shows the position of foreign tonnage in our foreign trade. This also indicates some remarkable results. Our foreign trade furnished employment for about 4 million tons in 1850; by 1880 this is more than trebled. The increase between 1870 and 1880 exceeds the total in 1850.

TABLE VII.—*Showing the Amount of Foreign Tonnage Entered and Cleared, with Cargoes and in Ballast, at Ports of the United Kingdom.*

Year.	With Cargoes only.			With Cargoes and Ballast.			Proportion to Total Entries and Clearances.	Proportion to British Entries and Clearances.
	Tons.	Increase.	Increase per Cent.	Tons.	Increase.	Increase per Cent.		
1850	3,981,366	—	—	5,062,520	—	—	34·89	53·61
'60	8,718,464	4,737,098	118·0	10,774,369	5,711,849	112·0	43·63	79·58
'70	9,381,641	663,177	7·0	11,568,002	793,633	7·0	31·57	46·13
'80	13,793,082	4,412,441	47·0	17,387,079	5,819,077	53·0	29·61	42·05

The total increase in the entrances and clearances with cargoes in our foreign trade in 1880 compared with 1870 was 18 million

tons; of this it appears that the British flag took more than 13½ millions, and all foreign flags together nearly 4½ millions. The foreign increase is nearly equal to that which was accomplished in the decade which immediately followed the repeal of the navigation laws, yet our own increase was nearly three times that of the foreign increase, viz., 13½ million tons against 4½, so that this remarkable result remains, that while foreign tonnage in our trade has grown from 4 millions to nearly 14, British tonnage has also grown during the same period from 8 millions to nearly 36 millions, and the proportion of foreign tonnage in our own foreign trade which was 34·89 per cent. of the total in 1850, is now only 29·61 per cent. In other words, the enormous growth of foreign tonnage has not sufficed even to keep that proportion of the foreign trade of the United Kingdom which it enjoyed before the repeal of the navigation laws, owing to the still larger growth of the national tonnage. The foreigner consequently cannot complain, seeing that his transactions in our ports have more than trebled; while the vitality of the national flag is shown, that while starting on more than double the basis, it has far more than quadrupled even that.

The relative position of different foreign flags in our trade appears by—

TABLE VIII.—*Showing the Tonnage of Sailing and Steam Vessels, with Cargoes, and their Nationalities, Entered and Cleared at Ports in the United Kingdom in the Years* 1850, 1860, 1870, *and* 1880.

Nationality.	1850.	1860.	1870.	1880.
British	8,039,308	12,119,454	22,243,039	35,885,868
American	1,215,225	2,734,381	1,134,215	882,277
Austrian	—	316,511	356,701	260,923
Belgian	71,775	112,537	305,384	461,078
Danish	285,263	618,681	623,798	1,158,57[illegible]
Dutch	240,444	445,556	426,214	1,049,377
French	369,624	616,410	785,658	1,133,630
German	—	1,797,747	1,430,595	2,576,819
Italian	—	275,688	811,903	884,206
Norwegian	331,664	948,212	1,975,575	2,914,407
Russian	163,254	242,673	538,443	470,336
Spanish	46,328	128,181	293,800	584,721
Swedish	125,649	366,700	591,985	1,310,707
Other countries	1,132,140	115,187	94,370	106,029
Total Foreign	3,981,366	8,718,464	9,381,641	13,793,082
Total British and Foreign	12,020,674	20,837,918	31,624,680	49,678,95[illegible]
Proportion of Foreign	33·2	41·9	29·7	27·8
„ British	66·8	58·1	70·3	72·2
	100	100	100	100

This table will be better appreciated if read with Table IX, in which steam is separated from sailing tonnage, and furnishes the reason for the remarkable growth under some flags.

TABLE IX.—*Showing the Tonnage of Steam Vessels only, with Cargoes only, Entered and Cleared at Ports in the United Kingdom, of different Nationalities, in* 1860, 1870, *and* 1880.

Nationality of Vessel.	1860.	1870.	1880.
British	Tons. 3,976,852	Tons. 11,825,002	Tons. 27,052,131
American	8,809	4,852	139,070
Austrian	300	6,704	None
Belgian	58,849	288,095	457,338
Danish	29,652	92,561	536,417
Dutch	122,838	161,062	875,774
French	42,699	206,602	552,758
German	344,959	399,673	1,149,645
Italian	432	3,765	7,796
Norwegian	18,115	27,952	138,276
Russian	20,717	98,561	46,697
Spanish	37,088	180,119	518,726
Swedish	16,165	62,556	593,175
Other countries	27,541	19,138	53,253
Total Foreign	728,164	1,551,640	5,071,925
Total British and Foreign	4,705,016	13,376,642	32,124,056
Proportion of Foreign	15·5	11·6	15·9
„ British	84·5	88·4	84·1
	100·0	100·0	100·0

The *American* flag shows a considerable decline on the decade; it has done nothing yet in steam. Its steamer entries and clearances were only 139,070 tons in 1880, while the entries and clearance of steamers between British and United States amounted to 5,508,476 tons.

Austrian tonnage is decreasing in our waters, no steamer under that flag appears to have visited our ports in 1880.

Belgian tonnage shows a considerable increase. It is all in steamer tonnage, the total being 461,078, and of that 457,078 is steam.

Danish tonnage nearly doubled in the decade, the increase in steam being from 92,561 tons to 536,417 tons.

Dutch tonnage declined between 1860 and 1870, but much more than doubled between 1870 and 1880, and the explanation is shown in the rise of its steam tonnage from 161,062 in 1870 to 875,774 tons in 1880.

French tonnage increased in our ports to the extent of nearly 50 per cent. in the decade. The steamer entries and clearances rising from 206,602 in 1870 to 552,758 in 1880.

German tonnage, which had declined largely between 1860 and 1870, nearly doubled in the last decade; the explanation lies in the rise of the steamer figure from 399,673 in 1870 to 1,149,645 tons in 1880.

Italy has done nothing in steam, and has just kept her place, the figure of 1880 being near to that of 1870, and the steam item under 8,000 tons.

The largest foreign figure in the table, and in every way the most remarkable is the *Norwegian*. Speaking roundly, Norwegian tonnage in the trade of the United Kingdom has increased nearly ten-fold since the repeal of the navigation laws. It trebled in the first decade after the repeal, doubled in the next, and in the last grew from 1,975,575 tons to 2,914,407. The largest tonnage under any other foreign flag entered and cleared in the United Kingdom in any year appears to be that under the American flag in 1860, viz., 2,734,381. In the same year the Norwegian tonnage was under 1 million (948,212 tons). The American has fallen to 882,277, and the Norwegian has grown to nearly 3 millions, as stated above. The only other flag that comes near to it is the German. But the steam explanation I offered of the German increase does not apply to the Norwegian, certainly not to anything like the same degree. For while German steamer tonnage was 1,149,645 tons in 1880, Norwegian was only 138,276 tons. The whole increase under the Norwegian flag was nearly a million tons between 1870 and 1880, but the steam increase for the same period was only from 27,952 tons to 138,276 tons, conclusively showing that this remarkable place in our national return has been made mainly by sailing vessels. When it is recollected that Norway has not two millions of inhabitants, far less than half the population of London, or about one-third of the population of Ireland, the wonder is increased that such a flag should head the list of foreign nations in our navigation returns. It is evident that the indomitable energy, and courage, and spirit for maritime adventure which belonged to their Viking ancestors is not exhausted yet.

Russia stands next on Tables VIII and IX, but needs no comment, as its flag shows a decline both in sailing and steam vessels.

Spain doubled her tonnage between 1870 and 1880, and the increase is chiefly in steam.

Sweden like Norway has trebled its tonnage in our trade since 1850, and during the last decade more than doubled the figure of 1870. Of an increase of 700,000 tons on the decade, it would appear that about 600,000 tons are steam.

Taking the whole increase of foreign tonnage in our trade at $4\frac{1}{2}$ millions, it may be disposed thus: $3\frac{1}{2}$ millions to the Scandinavian flags, and 1 million to all other flags put together. The Scandinavian increase in steam only is a little less than 2 million tons.

For the sake of accuracy, I am bound to add that a very large part of this foreign steam tonnage is built in the ship yards of the United Kingdom. I am not able to state how much; but the extent to which foreigners have decided to compete with us in our own trade with our own tools, *i.e.*, British-built iron steamers, may be judged by the fact that 106 such vessels were built for foreigners at our various ports during 1880. It is, moreover, true that, besides being built here, a considerable portion of the steam tonnage under some of the foreign flags is owned by British subjects. To the extent, therefore, that foreign tonnage in our trade has been increased by steam, it is to be remembered that we are not totally disinterested either in its production or ownership.

I emphasise the most important fact of the decade in the next table:—

TABLE X.—*Showing the Total Tonnage of Steam Vessels Entered and Cleared in the United Kingdom in the Years* 1840, 1850, 1860, 1870, *and* 1880.

Year.	Total Tons of Steam.	Of which British.	Percentage of British.	Increase per Cent. of British Steam.
1840	791,555	663,048	83	—
'50	2,209,847	1,802,955	81	171
'60	4,967,473	4,186,620	84	132
'70	15,072,331	13,341,058	88	228
'80	37,213,912	30,976,037	83	132

The "leaps and bounds" shown here may be described thus:—British steam tonnage trebled during the decade 1840-50; increased two and half times by 1860; more than trebled between 1860-70; and between 1870-80 increased two and half times again. I am not acquainted with any national industry of which such statements could be made on the authority of parliamentary returns. In concluding my last paper, I ventured to say to the Statistical Society that, as the economic conditions of this great industry rested on the solid foundations of our coal and iron strata, and on the genius of our engineers, there were good grounds for hoping we might keep the advantage then held. Table X shows that we have kept it, by increasing our 13 millions to 31 millions of steam entries and clearances, and that the process quickened pace as the decade closed, the last year reaching an increase of $3\frac{1}{2}$ millions of tons, its

increase being only about half a million short of the total steam entries and clearances of 1860.

The size of our mercantile fleet is very imperfectly shown by Table XI:—

TABLE XI.—*Showing the Number and Tonnage of Vessels belonging to the United Kingdom.*

Year.	Number.	Tonnage.	Rate of Increase.
1850	25,902	3,485,958	—
'60	27,663	4,658,687	30·7
'70	26,367	5,690,789	22·1
'80	25,185	6,574,513	15·5

The slightest glance at the figures of Table XI suffices to indicate that something more is needed to explain how, out of a reduced number of ships compared with either 1870, 1860, or 1850 even, and with so moderate an increase in the registered tonnage as 15½ per cent. in the last decade, such results could have been attained as those indicated in the previous tables. The additional information is supplied by Table XII, in which sailing and steam vessels are separated:—

TABLE XII.—*Showing the Number of Sailing and Steam Vessels Registered as Belonging to the United Kingdom, with their Average Size, and the Degree of their Activity in* 1850, 1860, 1870, *and* 1880.

Year.	Sailing Vessels.					Steamers.				
	Number of Vessels.	Tonnage.	Increase or Decrease	Average Size.	Degree of Activity.	Number of Steamers	Tonnage.	Increase per Cent.	Average Size.	Degree of Activity.
				Tons.					Tons.	
1850	24,797	3,396,359	—	130	2·24	1,187	168,474	—	140	10·71
'60	25,663	4,204,360	23·7	164	2·31	2,000	454,327	170	227	9·22
'70	23,189	4,577,855	8·8	198	2·56	3,178	1,112,934	145	350	11·98
'80	19,938	3,851,045	Decrease 15·8	193	2·69	5,247	2,723,468	144	518	11·37

From Table XII it appears that we have more than 3,000 fewer sailing vessels under our flag in 1880 than we had in 1870, representing a decrease of tonnage from 4,577,855 to 3,851,045, nearly three quarters of a million tons.* We are not building new sailing

* In the years 1880 and 1881 nearly 2,000 wooden sailing vessels disappeared from the registry of the United Kingdom. In 1881 there were 244 more vessels lost, broken up, &c., belonging to the United Kingdom than were built and registered therein during the year, but the tonnage of those built exceeded that of those lost by 394,668 tons. The increase in steamer tonnage alone over the loss of the same in 1881 was over half a million tons, viz., 518,918 tons.

ships to the extent of their annual loss and sale to foreigners. Instead of doing so, when we lose or sell a wooden sailing ship, we replace it with an iron steamer. But Table XI shows we have done more than this; for although the sailing tonnage on the register was less in 1880 than in 1870 by 15·8 per cent., the total tonnage on the register in 1880 was 15·5 per cent. more than 1870, from which it follows that we not only added as much steam tonnage as we lost in sailing tonnage, but so much more as to mark this gain of $15\frac{1}{2}$ per cent. This is clear, from the steamer portion of Table XII, by which it is apparent that while the loss on sailing tonnage was 726·810 tons on the decade, the gain on steam tonnage is more than double that, say 1,611,534 tons.

It will be observed that the steamer fleet nearly trebled between 1850 and 1860, increased two and a half times again between 1860 and 1870, and did the same between 1870 and 1880. On the register, a steamer of 1,000 tons reckons for no more than a sailing vessel of the same tonnage, but in the entries and clearances it may be taken as at least three times as much. Practically, therefore, while we lost 726,810 tons of sailing tonnage, and replaced it on the register with 1,611,534 tons of steamer tonnage, that figure must be multiplied by at least three, producing 4,834,602 tons of effective carrying power of the same kind as that which was lost. The replacement was therefore equal to seven times the loss —726,810 against 4,834,602 tons. From this it follows that steamer tonnage added to our effective carrying power during the last decade a larger amount than that of our entire sailing fleet in 1870. This is the reason why the bare statement of the registered tonnage in Table XI, without distinguishing steam from sail, gives no indication of the real progress in carrying power; and it is the further explanation of such an increase in the entries and clearances —that is in the work actually done—being accomplished by so apparently small an addition to the total registered tonnage as $15\frac{1}{2}$ per cent. The real addition to carrying power in the decade was more than 50 per cent. Our effective carrying power in 1870, reckoning 1 steam ton as equal to 3 sailing tons, was under 8 millions; on the same rule, in 1880 it was over 12 millions. These statements make it plain that the reduction of our sailing fleet is not a calamity to be deplored, but rather that healthful process of replacing obsolete and inferior tools with the best and newest, by continuance in which only can we expect to keep the leading place we have won as maritime carriers.

As to the correctness of the estimate that 1 ton of steam tonnage should be reckoned as equal to 3 tons of sailing tonnage, I venture the opinion that it is an under statement of the fact, rather than an exaggeration of it. I am confirmed in this opinion by the

estimated degree of activity of the respective kinds of tonnage given in Table XII. Steam exceeds sailing tonnage four times at all the periods mentioned therein. I arrive at this degree of activity by dividing the total tonnage registered with the total tonnage entered and cleared. I do not use this as absolutely correct, but it serves fairly for a comparative observation, and in any case it more than justifies the ordinary computation of 1 steam ton being more than the equivalent of 3 sailing tons.

It is remarkable that the total number of vessels on the register of the United Kingdom is less than at any period since 1850. It was then 25,984, in 1860 it was 27,663, in 1870 it was 26,367, and in 1880 only 25,185. The decrease in the number of sailing vessels exceeds the increase in the number of steamers. It will be observed also in Table XII that not only the number but the average size of sailing vessels, which had been steadily increasing up to 1870, actually decreased during the decade. This is explained mainly by the fact that no middle-sized sailing vessels which are lost are now replaced. The production of sailing vessels is almost restricted either to very small wooden coasters or very large iron ships, specially suitable for such trades as the Pacific, on which steam has so far encroached slightly, owing to the costliness of steaming such a very long distance. The Panama canal, when made, will, however, as rapidly and certainly revolutionise that as the Suez canal has done the Indian trade, unless, indeed, the extension of the Monroe doctrine, recently promulgated, should be permitted to make the voyage through the Panama isthmus a mere American coasting trip, and subject all but the United States flag to exclusion from it in consequence. While, however, the average size of sailing vessels decreased under the operation of the causes named, that of steamers largely increased, from 350 tons in 1870 to 518 tons in 1880. This figure in itself is a further explanation of how, with less tonnage, we do more work. But it is much more than that. An increase in one decade of nearly 50 per cent. in the average size of steamers means that trade has adjusted its operations so that it is possible to carry in far larger bulks. But for this the steamer development would have been impossible. By this the cost of sea carriage has been greatly cheapened, to the advantage of both producers and consumers, and much business that was impossible has become quite possible. On articles of high value freight has become so small a fraction that a recent writer in the "Times" described it thus:—

"The ocean transport of American fresh meat does not at "present cost $\frac{1}{2}d.$ per pound." Including commissions, insurance, and other items of charge, he adds, that "its transport and sale does "not exceed $1d.$ per pound. The present charge for boxed meat from

"Chicago to London is 2*s.* per 100 pounds. A tierce of meat is "carried from New York to London for 3*s.*, or at the rate of 15*s.* per "ton. This contrasts favourably with 25*s.*, the usual charge for a "ton of such goods forwarded from Liverpool to London, or 20*s.* "from Bristol to London, or 1*d.* per pound if fresh meat is railed "from Liverpool to London."

I name these facts as illustrations of what has been accomplished in the way of cheapening ocean carriage by the use of steam, and the adaptation of trade arrangements to the handling of far larger cargoes than formerly. A benefit all round has been accomplished by this gradual increase of the size of steamers, and the latest returns indicate that it is rapidly being carried further.

The distribution of our fleet as between home and foreign trade appears by—

TABLE XIII.—*Showing the Number and Tonnage of Sailing and Steam Vessels Employed in the Home and Foreign Trade, with their Average Size and the Number of Men Employed.*

	Number of Vessels.	Tons.	Average Tonnage.	Men Employed.	Number of Men to each 100 Tons.
	Sailing Vessels.				
Home Trade—					
1870	11,598	766,742	66	40,265	5·0
'80	10,317	660,301	64	34,479	5·2
	1,281 Decrease	106,441 Decrease	2 Decrease	5,786 Decrease	0·2 Increase
Per cent.	11·0	13·8	3·0	14·0	4·0
Foreign Trade—					
1870	6,757	3,468,717	513	96,954	2·7
'80	4,197	2,749,385	655	63,734	2·3
	2,560 Decrease	618,332 Decrease	142 Increase	33,220 Decrease	0·4 Decrease
Per cent.	37·0	17·8	27·0	34·0	14·0
	Steam Vessels.				
Home Trade—					
1870	1,071	170,746	159	11,445	6·7
'80	1,295	233,271	180	13,883	5·9
	224 Increase	62,525 Increase	21 Increase	2,438 Increase	0·8 Decrease
Per cent.	20·0	13·7	13·0	21·0	12·0
Foreign Trade—					
1870	935	760,410	813	33,089	4·3
'80	2,193	2,216,057	1,010	65,153	3·3
	1,258 Increase	1,456,447 Increase	197 Increase	32,064 Increase	1·0 Decrease
Per cent.	134·0	191·0	24·0	96·0	23·0

The results of Table XIII show the large decrease that is taking place alike in home and foreign trade in sailing vessels, and the great increase in steam. It seems to indicate, moreover, that by far the largest economy of labour that has been accomplished in the decade was in steamers.

So far I have spoken of the work done by our fleet of 25,000 ships and steamers, as disclosed by our own tonnage entries and clearances, and I think you have agreed with me as to its development, but this statement would be very imperfect did I not remind you that our flag does an immense proportion of the carrying trade of most of the other nations; this work, however, finds no record in our returns, though it is largely the explanation of the demand for tonnage, and in every way an advantage to the realm. How far each flag is able, and unable, to do its own work appears in—

TABLE XIV.—*Showing the Proportion of the Entries and Clearances in the Countries named under the National Flag, and under Foreign Flags.*

Date of Return.	Country.	Proportion of Total Entrances and Clearances under the National Flag.	The same under Foreign Flag.
1880	United Kingdom	70·4	29·6
'79	Russia (about)	13·5	86·5
'78	Norway	70·0	30·0
'79	Sweden	35·4	64·6
'79	Germany	37·6	62·4
'79	Holland	30·7	69·3
'79	France	28·0	72·0
'76	Spain	36·3	63·7
'78	Italy	39·0	61·0
'79	United States	21·3	78·7

The proportion of foreign tonnage in the trade of the following States increased since 1860. Russia from 83·5 to 86·5; Norway from 25·5 to 30·0 in 1878; Sweden from 59·7 to 64·6 in 1878; Holland from 60·5 to 69·3 in 1879; France from 58·6 to 72 in 1879; United States from 29·2 in 1860 to the large proportion of 78·7 in 1879.

It must not be supposed that all this foreign tonnage in the trade of the countries named in Table XIV is British tonnage. I am not able to say the exact proportion, but I am satisfied that a very preponderating proportion is British, and what this means may be inferred when I add that the entries and clearances of foreign tonnage in the States named (of course including our own) for the year of the last return was nearly 79 million tons (78,767,000). You will perceive therefore that the foreign work

of our flag, which, as I have stated, makes no mark in our returns, is immense.

We are brought by this view of the subject naturally to ask something about the registered tonnage of other countries than our own. This appears in—

TABLE XV.—*Tonnage of the Merchant Navies of the Countries named.*

Country.		Tonnage Registered as Sea-going.	Of which Steam Tonnage.
United Kingdom		6,519,772	2,720,551
Greater Britain		1,927,399	228,531
Total British empire, 1880		8,447,171	2,949,282
Norway	1878	1,526,689	51,674
Sweden	'79	530,803	83,659
Denmark	'79	251,958	48,799
Germany	'79	1,171,286	196,343
Holland	'79	339,155	58,597
Belgium	'79	71,191	59,536
France	'79	932,853	255,959
Italy	'79	1,005,972	72,666
United States	'80	1,352,810	156,323
		7,182,717	983,556

From Table XV it appears that the flag next in importance to that of Great Britain is what I have ventured to call that of Greater Britain. Our colonies, like ourselves, seem to have prosecuted maritime enterprise to such an extent that they have not far from 2 million tons on the register. Norway is next on the list with 1½ million tons; all the other European nations have much less, and the United States less than 1½ millions. Of steamer tonnage France only has more than Greater Britain, all other States less; while it appears that the steamer tonnage of all other flags put together, makes about one-third of the British.

Whether this relative position with other flags is being sustained or not depends on the tonnage that we lose, and sell, and build. The tonnage first built and registered in 1860 was 211,968 tons, in 1870 it was 342,706 tons, and in 1880 it was 403,895. Of the latter, 346,361 was steamer tonnage, and only 57,534 sailing. Though the figures are not available yet, it is known that the building for 1881 was largely in excess of 1880; indeed on one river—the Clyde—the aggregate tonnage launched was 341,022 tons, a good deal more than 1,000 tons per day, excluding Sundays, and nearly 100,000 tons in excess of the largest production on record. Like activity prevailed in the Tyne, Wear, and Tees districts. At the

beginning of 1882 it was estimated that the tonnage then building was 515 steamers, aggregating 958,000 tons, and 127 sailing vessels of 130,000 tons. So far as the production of tonnage is concerned therefore it never was greater than at the present moment. I need not add, that this production is not all for the British flag, but so large a proportion of it is, that it cannot fail to make a most sensible impression on the returns for the current year.

From the new tonnage produced every year a large allowance has to be made for vessels wrecked, missing, abandoned, sunk in collision, broken up, and sold to foreigners. In 1880 the tonnage belonging to the United Kingdom alone which from these and other causes disappeared from the register was no less than 500,120 tons. The net decrease of sailing tonnage that went off the register was 213,966 tons. The net increase of steamer tonnage added was almost identical therewith, viz., 212,449 tons. The loss of tonnage in 1881 is alleged to have been very large. The weather at sea during the last three months was exceptionally bad, and gales blew with remarkable frequency and force. But in 1880 the loss of life and the wrecks were both low; it would seem from Table XVI that sea traffic is getting less perilous.

TABLE XVI.—*Showing the Number of Sea Casualties which occurred to British and Foreign Vessels on or near the Coasts of the United Kingdom in the Years named.*

	'70-71.	'71-72.	'72-73.	'73-74.	'74-75.	'75-76.	'76-77.	'77-78.	'78-79.	'79-80.
Wrecks involving total loss	556	381	576	408	472	502	511	422	397	355
Casualties involving partial loss	1,092	1,140	1,628	1,395	3,118	3,255	3,653	3,219	2,605	2,164
Total	1,648	1,521	2,204	1,803	3,590	3,757	4,164	3,641	3,002	2,519
Wrecks involving total loss from collisions	83	71	80	62	61	77	65	59	64	64

It will be observed in Table XVI that the highest figure of total loss is early in the decade, that the three later years are light, and 1880 the lightest year of total loss on the record. So also serious collisions resulting in total loss were lower towards the end of the decade, in spite of the enormous increase of traffic on the coasts of the United Kingdom. The most curious result of Table XVI is the sudden jump in the number of minor casualties after 1873. Those of 1874 nearly doubled, 1875 and 1876 were both heavier, but then a rapid decline set in, which continued to the end of the decade, still, however, leaving 2,164 minor casualties in 1880, against 1,092

in 1870. What explanation can be given of this? The years in which this increase of casualty began and continued were those in which the "Plimsoll legislation" was at its height. It cannot for a moment be supposed that this agitation had any effect in increasing the number of casualties, but I do think it had the effect of accidents of quite trivial importance being reported which previous to that time would have been considered too trivial for official notice. I am not acquainted with any other explanation either of the sudden rise in 1874 or of the equally sudden and subsequent decline. If this be correct, the value of this table is not much so far as casualties other than total loss are concerned. Agitations are apt to produce statistics as they proceed, and this Society has often seen the aphorism illustrated that nothing is so deceiving as facts, except figures. As to the wrecks and collisions involving total loss, the returns are no doubt reliable, and they show a steady diminution of both. Since 1872 the decline has been almost continuous. As to the increase in the minor casualties, I doubt not they prove great zeal on the part of the recorders about the middle of the decade. I do not think that they prove increased casualty at sea, for all the real evidence lies the other way. And it is not easy on any other supposition to explain why they should have trebled during the years of the Plimsoll excitement, and afterwards have fallen from 3,653 in 1876 to 2,164 in 1880, the traffic to which they relate having largely increased.

The subject of wrecks and casualties naturally leads to the question of men employed and lives lost. On both points the public returns are ample.

TABLE XVII.—*Showing the Number of Men Employed in Sailing and Steam Vessels belonging to the United Kingdom, and distinguishing British from Foreign Seamen.*

Year.	Men in Sailing Vessels.	Men in Steam Vessels.	Total.	Of which British.	Foreign.	Proportion of Foreign.
1850....	142,730	8,700	151,430	—	—	—
'60....	145,487	26,105	171,592	157,312	14,280	9·0
'70....	147,207	48,755	195,962	177,951	18,011	10·1
'80....	108,668	84,304	192,972	169,692	23,280	13·72

The first point observable in this table is that, notwithstanding the immense increase in the work done, as shown by the rise of 22 million tons in the foreign entries and clearances between 1870 and 1880, the number of men employed to do the work decreased

from 195,962 to 192,972. This is mainly the result of the use of steam and of carrying in larger cargoes. It indicates a most satisfactory economy of human labour. It is further observable, and in many respects regretable, that the number of British seamen decreased from 177,951 men to 169,692 in the decade. To make up for this decrease of British seamen, we had to increase the number of foreigners 5,000, raising their number from 18,011 in 1870 to 23,280 in 1880. There should be some explanation of this decrease of British seamen and increase of foreign under our flag, during a decade in which our tonnage grew until it considerably exceeded the sea-going tonnage of all flags put together. It would be a bad sign indeed if with the growth of the size, quality, and efficiency of our vessels, we should find the disposition for maritime adventure in our population diminish; and yet it appears so not only as regards men, but the number of apprentices' indentures enrolled has declined steadily for many years. This is evident from—

TABLE XVIII.—*Showing the Number of Indentures of Apprenticeship to the Sea Service Enrolled during the Years named, from* 1850 *to* 1880.

Years.	Indentures Enrolled.
1850	5,055
'55	7,461
'60	5,616
'65	5,638
'70	4,241
'75	4,397
'80	3,501

The indentures in existence were 18,303 in 1870, but only 14,667 in 1880. I do not see how this can be regarded otherwise than very unsatisfactory, whatever may be the cause of it; and the regret is only lessened by our getting foreign seamen to make up the large deficiency of British. It may be that the sensational representations about maritime affairs which so often engaged the attention of the legislature during the period, had something to do in disinclining young Englishmen to become seamen, but the published returns of mortality among seamen in the mercantile marine, so far from showing any justification for the sensational appeals which were made to the legislature, record an almost continuous reduction in the loss of life throughout the decade.

On this point I direct attention to—

TABLE XIX.—*Showing the Number of Deaths by Drowning in the Merchant Service by Wreck and by Accident from* 1869 *to* 1879.

Year.	Strength.	By Wreck.	By Accident.	Total.	Mortality per Thousand.		
					By Wreck.	By Accident.	Of Total.
1870	195,962	1,655	989	2,644	8·5	5·0	13·5
'71	199,738	1,500	976	2,476	7·5	4·9	12·4
'72	203,720	1,324	973	2,297	6·5	4·8	11·3
'73	202,239	2,231	1,032	3,263	11·0	5·1	16·1
'74	203,606	1,819	1,040	2,859	8·9	5·1	14·0
'75	199,667	1,525	987	2,512	7·6	5·0	12·6
'76	198,638	1,237	1,033	2,270	6·2	5·2	11·4
'77	196,562	1,461	1,077	2,538	7·4	5·5	12·9
'78	195,585	1,164	922	2,086	6·0	4·7	10·7
'79	193,548	978	1,023	2,001	5·0	5·3	10·3
'80	192,972	—	—	1,837	—	—	9·5

There is reason for thinking, the registrar-general states, that this table exaggerates the mortality of seamen afloat. Some of the deaths recorded are on board colonial and fishing vessels, whereas the strength on which the rate of mortality is computed relates only to the registered vessels of the United Kingdom. It is to be remembered also that a winter of exceptional severity, like that of 1872-73, or a succession of gales such as prevailed during the last three months of 1881, may have quite exceptional effect on the returns. The loss of about 1,000 lives in Her Majesty's ships "Captain," "Eurydice," and "Atalanta" made the total loss of life in the royal navy during the decade three times what it would have been in the absence of these quite exceptional casualties. As the largest sea carriers, having always about a quarter of a million men afloat (including the royal navy), we must suffer a large loss of life annually from sea perils, from which these lives would be exempt if not afloat. It is impossible to avoid exposing those lives to sea risks unless we give up our maritime enterprise, and cease to be the sea carriers for mankind. But it may be possible to increase safety at sea by increased precautions on the part of owners and mariners, and Table XIX shows an almost constant improvement. The deaths by drowning from wrecks were 8·5 in 1870, and had fallen to 5 per 1,000 in 1879. The deaths by drowning from accident were 5·0 per 1,000 in 1870, and varied very slightly indeed throughout the decade. Indeed, Column 4 of this table is a statistical curiosity in this respect. Deaths by drowning from accidents at sea would be expected to be a very variable figure in different years, but Column 4 reads like a constant rather than a varying quantity—989, 976, 973, 987, 922—five years out of the ten with marvellously little variation; and the remaining years nearly as

close to each other—1,032, 1,040, 1,033, 1,023. If the definition of "accident," out of which these figures result, be correct, it would not seem as though much amelioration can be looked for here. And I think it is fair to add here that the public returns show that the lives lost by drowning in inland waters, such as docks, canals, rivers, &c., by bathing and boating accidents, and by falling from the land into the water, were nearly double the loss of life by drowning at sea in 1879, the actual figure being 3,690 against 2,001 drowned from all causes at sea, or 978 by wreck. From all causes the loss of life by drowning was 13·5 in 1870, and only 9·5 per 1,000 in 1880, a decrease of 29·6 per cent. on the decade. Of course it may still be said that even though a diminishing loss, it is yet large; but I do not think more is to be looked for than gradual improvement in this matter. The deaths of seamen from all causes were 19·0 per 1,000 of strength in 1879 against an average annual rate of 23·2 per 1,000 during the preceding twenty-eight years, showing that whatever the actual, it compares favourably with the past, and that the course is towards improvement. At the same time I must add that with other rates of mortality this does not appear to me to compare badly. The annual rate of mortality among the non-commissioned officers and men of the army for eighteen years, between 1861-78, is stated to have been 17·3 per 1,000. In 1879 the strength of the army at home and abroad was 191,290 men; the seamen afloat for that year were 193,548. The deaths in the army were 4,239, or 22·2 per 1,000; those among seamen were 3,692 from all causes, or 19·0 per 1,000, as above stated. The mortality in the army in 1879 was heavy, as it might any year be in the merchant service by storms, or in the royal navy by such a disaster as the "Atalanta." It is reasonable to add, moreover, that if our seamen were on shore, they would most likely be employed in mines, on railways, or in factories of various kinds, which yielded 12,866 deaths in 1879 in England.

These are classified thus:—

On railways	945
In mines	1,111
Other mechanical injuries	4,494
Chemical injuries	1,631
Drowned	2,634
Various	2,051
	12,866

So that, before the mortality among seamen can be considered high, it must be compared with the mortality the same persons would be subjected to in the occupations they would follow on shore, if they were not at sea. So regarding the matter, I am forced to the conclusion that the mortality of seamen is not materially different from that of the army abroad, or from many of the larger

industrial occupations at home. These figures, showing the steady diminution in the rate of mortality—that of the year 1880 being the lowest on record—will, I hope, tend to correct any erroneous impression on this subject, and lead to a larger number of British subjects being found under our flag.

In concluding this paper, I may be permitted to say that the story which it unfolds is one of which Englishmen need not be ashamed. If it is essential to our political importance in the world that we take a leading part in its maritime enterprise, it is satisfactory to know, on the authority of the public returns, that the sea-going tonnage of all other States combined does not equal ours. If the daily food of nearly half our population is dependent on sea communications, it is reassuring to know that they are so extensive and efficient. If asked whether the remarkable growth of the last decade will continue, I think the reply may be ventured, that while the statistician does not pretend to foretell, even he cannot help observing the quality of the facts out of which his figures grow, and they all indicate that the growth is natural, and therefore likely to continue. It would be quite otherwise if such a development of carrying power had sprung into existence under the artificial stimulus of a great war, or of an Act of Parliament granting bounties on the construction and navigation of ships, or restricting part of the national trade to the national flag; the war would cease, and another parliament might make short work of the bounties and restrictions. But the progress I have related rests on no such uncertain foundations. The English Parliament has granted no encouragement in the form of bounties to British shipping, it has not even let the ship owners alone, but repeatedly during the decade vexed and harassed them, by interfering with directions as to how shipping business should be carried on. The results attained are in spite of this, and the supreme proof that our true national interest lies in leaving such industries the largest possible liberty. If this be continued there is no reason why the progress of the last decades should not continue. It rests really on the secure foundations of our coal and iron and industrial skill, and the perseverance with which our engineers are improving steam propulsion at sea. These assure the supply of vessels. The demand for them rests, not merely in the disposition of nations to exchange products, yet in its infancy, but more directly in the growing wants and enlarging spending power of the European peoples. More stable foundations for a great industry it is not easy to conceive. No doubt it will suffer checks and periods of slackened demand, but the progress of the last ten years furnishes a measure of the possibility of further growth, which is really limited only by the demand for maritime transport, and adds greatly in many ways to our national security.

Discussion *on* Mr. Glover's Paper.

Mr. S. Bourne said: I did not expect to be called upon to speak quite so early in the evening, but I am glad to be one of the first to thank Mr. Glover for the very interesting paper which he has given us, and the vast amount of information which he has tried to pack away in the comparatively limited space at his disposal. I am glad that it will be placed, for future reference, amongst the papers of the Society, and I think we may congratulate ourselves in the proof that this paper supplies of one great advantage which free trade has conferred upon our country, not only free trade in manufactures, but free trade in importation and exportation. Without our system of free trade, it is utterly impossible that our manufacturing interests should have grown to anything like their present dimensions, or been conducted in anything like so satisfactory a manner. Having said this much, you will pardon me for a few points of criticism. Our desire here is to maintain our statistical tables as accurate as possible, both as to the principles and as to the details contained in them. Taking one specific year and comparing it with any year ten or fifteen before, oftentimes leads to very misleading results. I do not say it detracts very much from the congratulations which we may exchange on our present position, but at any rate it is a fact that 1880 being compared with 1870 presents some very different results from what it would do if compared with any of the years from 1870 to 1879. Between 1870 and 1879 our trade in many respects descended, and then it ascended again, and we are obliterating altogether a series of depressions which did exist, and which many persons, I think, are not without reason in saying are likely to be recurring again. It has not been quite as he seems to think in this sentence, "Our "exports and imports steadily grew." If we take figures, for example, of the exports of iron, we find that in 1870 the export was 2,825,000 tons; in 1872, 3,380,000 tons, an increase of $\frac{1}{2}$ a million of tons. But this went down in 1873 to $2\frac{1}{4}$ millions, so that the ascent is really only a return. It may be constant or it may be exceptional, but we are mounting up the hill again. The true comparison would seem to be not with isolated years, but with the average of a series of years, which would bring out some very different results. I may mention as an instance of a fallacy of the kind, one that occurred in a recent letter of Professor Leone Levi to the *Times*, as to the returns of the income tax. Taking the figures for certain years, he attempted to show that the excessive imports corresponded with the excess of assessment for the income tax, arising simply from the fact that the years chosen were at intervals of ten years, but taking intervening years a totally different argument would have come out. It would have been shown as clearly as possible that the assessment of income tax sometimes decreased with the increase of imports. We must not take altogether

for granted arguments founded on isolated years, rather than upon the series of averages. I would again remark with regard to some of the articles of export, the same thing occurs with regard to iron and steel, but there is this remarkable difference, that when we compare 1870 and 1880, we find that there is an increase in the exportation of iron, but it is entirely of pig iron, the raw material, rather than the manufactured articles, and consequently it does not follow that the increased exportation of iron at all comports with the manufacturing prosperity of the country. These are limitations to the favourable results at which we may seem to arrive from the figures with which Mr. Glover has favoured us. Passing to another point, remarks are made upon the tonnage carried under the American flag. I think we might find in this a very strong argument in favour of free trade, which the author has not pointed out. Two causes operated in decreasing the navy of America. In the first instance, during the Confederate war, an immense number of vessels from the American navy came under the English flag, and they have never been returned; but the principal reason of the decrease of the American navy and of the increase of ours arises from the fact of her protective policy. While we were building wooden ships she had an advantage in having the material close at hand; now, when iron ships are being built, we have the advantage in having the iron at hand. But at any moment, and I think that moment not very far distant, America may find that it will be absolutely necessary to admit our iron, and remove those protective duties which are working such destruction to her mercantile navy. If these were removed we should not be sending pig iron in large quantities, rather iron plates for ships; but she would resume her position as a great ship owning country, and absorb a large amount of the carrying trade which we now enjoy. It is to free trade that we are indebted now, but I think we must remember that we derive some very great advantage from the maintenance of protection in foreign countries. Their own progress is retarded by their protective duties. A considerable amount of our capital being sunk in skilled manufactures, in reality takes the profits which protective duties confer from the pockets of agriculturists of America in order to fill those of our own manufacturers. In regard to the differential rates of railway transit in favour of the foreign produce, I can hardly think this is a matter which is likely to continue long. It is a species of unfairness which Mr. Evelyn Ashley's committee on railways will seek to remove. If a tierce of beef can be conveyed from New York to London at the rate of 15*s.* per ton, whilst the carriage of meat from Liverpool to London is 25*s.* per ton, there is something radically wrong in our railway management, or in the arrangements which permit such an injustice to our home growths. The thing is monstrous, that meat can be brought from New York to Liverpool and charged at a lesser amount for carriage from New York than from Liverpool to our market. I have noticed, with regard to the casualties, that if the returns had been carried on one year longer, to 1881, there would have been shown an amazing increase in their number. It is a fact that the number of casualties at sea

depends very much upon the seasons, and if I am right in stating that the losses during 1881 have been very much in excess of those in 1880, that to a certain extent will invalidate the argument that there is a continuous diminution in the number of casualties to which our seamen are subject. As to the diminution of the number of seamen, that of British seamen in particular, we may say that one reason is the great development of our colonies. That has afforded an attraction to the buoyant and active spirits of our young people. Many lads, who in former times chose maritime life as an occupation adapted to their energies, now go to our colonies. This is not a matter to be regretted, for we want all the nerve and vigour which youth and life and buoyancy of spirit can give, in order to people our colonies, in which, I believe, we shall find the future markets for our manufactures, when foreign nations increase as they are increasing, and manufacturing for their own. Coming to the conclusion, I think we may all join with Mr. Glover in feeling satisfaction at the progress that has gone on, and in the hope that the same rate of progress may continue, though I confess it is with some degree of doubt as to whether we are not just at present at the top wave in our inflated condition of things—whether the very great increase of shipbuilding is not about to spend itself out. Inasmuch as it has been free trade which has led to our growing success, we must be prepared for a time when other nations see the benefits we are receiving from that freedom of trade, for then we shall not be in a position to monopolise so much of the trade in shipbuilding or merchandise as we have hitherto done. I think it is upon free trade our prosperity is very much dependent, and, in my opinion, it may be of a very considerable extent imperilled by free trade being adopted abroad. I mention this matter because I think it is of extreme importance that we should not calculate upon the continuance of any state of prosperity, and so sink large amounts of capital in extending manufactures which may be ultimately lost to us; whereas, I think there is a far greater field for the investment of capital and the employment of energy in our colonies. That is what I look to as the great means by which manufacturing and trading prosperity is to be continued and enlarged. Having said so much, you will allow me to say that Mr. MacIver was kind enough to entrust me to ask a few questions on the subject of this paper, and, simply as his agent, I shall ask Mr. Glover, with his permission,—First, whether the pecuniary interest of shipowners is not distinctly in favour of maintaining our present system of free trade? secondly, whether it does not suit him perfectly, as it does me, to carry away coals, pig-iron, &c., and earn a double freight by bringing back some of those things in the shape of manufactured goods? thirdly, whether it does not suit him, as it suits me, that our home agriculture should be ruined as quickly as possible, in order to import food at good rates of freight? fourthly, whether it is not the case that well-managed steamers of a class adapted for this kind of work and earning large profits, will cut out those of a former state of things for export? This points to the fact of some importance that, whilst we are importing more food from abroad, we are also exporting more raw materials from

home, a state of things not altogether satisfactory. That is to say, if we are increasing our shipments very rapidly, it is an increase of raw materials in preference to manufactured goods, and a great deal of our shipping prosperity depends upon that which is certainly not beneficial to the country. It may be very advantageous to the shipowners, but certainly not to the people, to send pig-iron to America instead of steel rails. We depend upon the raw materials of various kinds, our coals for example, more than we do upon the manufactured article. Our export of manufactures indicate that the rate of increase of late has not kept pace with the increase of our population, and it must be recollected that, inasmuch as all the increase of our population has to be fed from foreign sources, we need an enormous extension of our export trade in order to keep things in the state they were. We have had, last year, a very large increase in our exports of various kinds. But I doubt very much whether throughout the country such a state of prosperity would have existed, or any security for the continuance of the present activity in manufacturing industry could be expected, as many of our friends are disposed to expect, had it not been for our maintenance of free trade.

Mr. Giffen expressed his agreement with Mr. Bourne in the highly favourable opinion he had expressed as to the value of Mr. Glover's paper. Mr. Glover had put into excellent form a good many facts relating to one of the most important industries of the population of this country. He thought, moreover, that he could express this opinion with less qualification than Mr. Bourne. He could not agree in the criticism which Mr. Bourne immediately proposed to pass upon the method Mr. Glover had adopted: that of selecting single years at intervals of ten years, so as to show the progress of the shipping business. It was quite true that in many comparisons, instead of taking isolated years, it was better to group a number of years together, and so compare an average of two or three years at one time with an average of two or three years at another time. But it was also quite true in many cases, and in regard especially to the statistics of industry in this country, that if you were going to make a comparison for a long period, it would be quite satisfactory to pick out isolated years at equal and distant intervals—say of ten years. The reason was that there was a kind of cycle in trade, and if you passed over an interval of ten years, you would eliminate a great many accidental and periodical fluctuations. For this reason, he believed that taking ten years periods, as Mr. Glover had done, Mr. Glover had given us substantially the same result as if an average of two or three years had been taken according to Mr. Bourne's suggestion. To make his argument complete, Mr. Bourne ought to have shown that a different result would have followed from dealing with groups of years instead of single years. The test of the validity of Mr. Glover's method would be to look into the details, and if Mr. Bourne had been able to point out any facts which would have altered Mr. Glover's conclusions, then his criticism would have been more to the purpose. Mr. Bourne, indeed, had gone on to point

out, with regard to exports of iron and steel, that in the intermediate years between 1870 and 1880, there had been a falling off in these exports, and that the extent of the falling off in the shipping was not shown in Mr. Glover's figures. Still this falling off was nothing more that one of the usual intermediate fluctuations in trade, which a long experience had taught us to expect, and as Mr. Glover systematically passed over an interval of ten years, the criticism did not really apply to his work. Allowing for such ups and downs, there had still been great progress from period to period. He would like to point out also, with reference to the shipping which Mr. Glover had been dealing with, that in point of fact, all through the last decade, including those years to which Mr. Bourne had referred, in which a falling off of the exports of British goods had taken place, there was yet an almost continuous increase year after year in the movements of shipping. He had got a table before him showing what these movements were, and he thought it would be interesting to quote the figures for one moment, and show that Mr. Glover was quite justified in selecting single years at intervals of ten years. The clearances of vessels and cargoes at the ports in the United Kingdom in the foreign trade, had been for the last ten years as follows:—

		Tons.
1870		31,600,000
'71		35,500,000
'72		37,100,000
'73		37,900,000
'74		38,800,000
'75		39,400,000
'76		42,500,000
'77		43,300,000
'78	First year in which there was a slight falling off	42,800,000
'79		43,900,000
'80		49,600,000

From these figures, it was quite clear that if Mr. Glover had taken the trouble to form groups of years instead of selecting single years at intervals of ten, the results he would have arrived at would have been identical with those he had stated. His method was thus quite accurate enough for all practical purposes, and we might depend upon the results shown. The facts thus stated were really very important with reference to the discussions upon the falling off in trade which had been lately going on. He had endeavoured to show in various official reports that the falling off between 1873 and 1879 was really, to a very large extent, a mere falling off in nominal values, a question of price merely; and he thought those figures as to shipping confirmed in a remarkable way what had been suggested on this head. All through these years of depression we had been doing quite as large a business as during the prosperous years of 1871-72-73, and now our business was increasing rapidly. Passing on to one or two points which Mr. Glover had raised, what seemed to him one of the most im-

portant was his reference to the amount of trade done by British ships, not only in the direct trade of the United Kingdom, as he might call it, that is, the trade indicated by the entries and clearances at ports of the United Kingdom, but what had been done in the foreign trade with other countries, that is, in carrying goods between, say, France and the United States, or between India and the United States, or one of the colonies and China; in fact, all the great carrying trade of the world which was going on. Mr. Glover gave some figures suggesting that this trade done by British ships must be enormous, and from investigations he had been making lately, to which he might have to call attention at the next meeting of the Society, he could confirm what Mr. Glover had suggested. He should doubt very much indeed whether the employment of the mercantile fleet of this country in the direct foreign trade was more than half, or quite so much as one-half, of the total employment of the fleet. Our ships were engaged in every sea, and were doing business all over the world, and our business between foreign countries or between foreign countries and British colonies exceeded on the whole, he believed, the business done in carrying goods to and from ports of the United Kingdom itself. These facts had a very important bearing—in fact, the whole of the statistics given by Mr. Glover had a very important bearing—on the question of the values of our foreign trade. In dealing with the question, most people seemed to assume that figures of our imports and exports were substantially the figures of our foreign trade; but this was not really the case. For many purposes it was important to remember that, in addition to our exporting British produce and manufactures, of which a record was kept at the custom house, we were also a shipowning and carrying nation, and that in this capacity we did a large amount of work for the world, the work so done being in the international account of the same nature as the export of a commodity. He was not merely referring to the profits of our shipping trade. We had to be paid not only the profits we earned, but for the whole work done, for the pay and provisions of the crews, for the repairs and replacement of the fleet itself, for coal put on board steamers to work the fleet, for harbour and light dues, and other expenses at home connected with the carriage. All these outlays, deducting no doubt whatever outlay took place abroad, so as to leave only the net balance due to the people of the United Kingdom, constituted a credit of a most important kind to this country in the international account, and this credit, in fact, took the same place in that account as a so-called export. He would have something to say at the next meeting upon this subject, but he thought it interesting to call attention at once to the fact that the credit of this country in connection with its shipping was a much larger total than it had ever been customary to suppose in these discussions. The more the subject was looked into, the more enormous the figure appeared to be. Another point upon which he wished to make a remark was with reference to the relative efficiency of steamers and sailing ships. He thought the figure which Mr. Glover had given, namely, that sailing tons were in efficiency relative to steam tons as one to three, was rather an

under estimate of the efficiency of steamers, which had now become by far the most important part of our mercantile fleet. Mr. Glover's figures agreed very well with those of Mr. Kiäer, of the Norwegian Statistical Bureau, who had paid great attention to this point, and who was still further investigating the subject. He had based his calculations on a great many statistics of the length of time occupied in different voyages which he had been able to collect. He (Mr. Giffen) doubted, however, if the method which had been adopted was really quite sufficient for the purpose, because it happened that steamers were now employed in many voyages for which sailing ships would be totally unfitted, and in which their actual efficiency would be much less in proportion to the efficiency of steamers than it was in the voyages for which they were now used. If sailing ships had now to do all the work of steamers, it would be found that the efficiency, instead of being one to three, was much more nearly one to four. It was also important as bearing on this point to remember that, according to the mode of computation practised, the net registered tonnage of steamers —it was the net tonnage which was always dealt with in the statistics—was somewhat lower, relative to the actual carrying capacity, than the net tonnage of sailing ships was to their carrying capacity. From this it followed that although, according to the statistics of voyages, the relative efficiency of sailing ships to steamers might appear as one to three, yet in a comparison of the entries and clearances according to the net registered tonnage, something would have to be allowed for the fact that the actual carrying capacity of steamers was more in proportion than the carrying capacity of sailing vessels. Another point referred to by Mr. Glover, and also glanced at by Mr. Bourne, was our alleged greater exportation of raw materials than of manufactured articles. It was said that the increase of our exports in recent years was an increase of the exports of raw material chiefly. The inference seemed to be that there was less employment for British capital and labour in our actual exports than if there had been exports more largely of manufactured articles. Without discussing the point whether the facts were really so, what he should like to point out was that very little turned in such a question upon the difference between a so-called raw material and a so-called manufactured article. If there was any difference it was in fact a difference rather in favour of the raw material than of the manufactured article. In the exports of so-called raw material—say pig-iron—there would probably be much more stored up produce of British capital and labour than in the exports of so-called manufactured articles, such as cotton manufactures, the raw material of which had been previously imported. Where the exports consisted of manufactured articles of which the raw material had been previously imported, it might be found that British capital and labour were only represented by about one-third or one-fourth of the total value exported, whereas in the exports of so-called raw material—such as pig-iron—the whole value exported was really the produce, or very nearly the whole value was the produce, of British capital and labour. Value for value, if you compare an export of 30 million pounds worth of cotton manu-

factures with that of 30 million pounds worth of pig iron or of coal, you would find that the latter represented an enormously larger amount of the produce of British capital and labour than was done by the exports of the cotton. The cotton manufactures would, perhaps one-half, be actually raw material which you had previously imported. He would only conclude by expressing again his very high opinion of the paper which Mr. Glover had read to them.

Mr. R. Price Williams said that having had occasion during recent years to devote a good deal of attention to the subject of tonnage, in connection with his professional avocation as an engineer, more especially in relation to the question of the increased dock accommodation required in the Port of London, which at present was engaging a good deal of attention, he must state that he had read this paper with very great interest and advantage, and he would take this opportunity of expressing his gratitude to the author for the very valuable data furnished in the paper. Before, however, proceeding with the few observations he had to make, he should just like to refer for a moment to a point which the author draws attention to, in connection with Table II, where he expresses his disinclination to accept as reliable the very large increase which appears to have occurred, viz., from 73 million tons in 1870 to 132 million tons in 1880. One cause of this discrepancy, he thought, was attributable to the fact, that the Board of Trade returns for 1870 did not include the tonnage of ballast, whereas the 1880 returns did. He had found as the result of an analysis of the last year's returns, that the cargo tonnage of vessels engaged in the coasting trade in 1880, was roundly about 40 million tons, and that the coastwise ballast tonnage amounted to about 14 million tons, giving a proportion of 64 per cent. of cargo, to 36 per cent. of ballast tonnage; if therefore the 73 million tons of cargo in 1870, be increased in this ratio, it will be found that the total tonnage, including ballast, in 1870 would amount to 85,292,000 tons, so that the decennial rate of increase, instead of being 82 per cent., as the author shows, would in reality be only 56·23 per cent.; and the same remark applies to another table (No. V.), given a little further on, in which the coastwise traffic is alone dealt with. Here again, as the Board of Trade returns for 1870 exclude the ballast tonnage, the figures in the paper giving the decennial rate of increase should be proportionately reduced. He should state that the direction of his recent investigations on the subject of the increase of tonnage in this country had been of a more limited and detailed character than those dealt with in this very valuable paper; he had, in fact, only taken some of the principal ports, such as Newcastle, Hartlepool, Cardiff, Newport, Grimsby, and Bristol, and he had also dealt separately with the tonnage at each of these ports, from 1855 down to last year; and further, he had not, as the author had done, taken the tonnage in decades, but in half decades. He might state, however, that the results he had arrived at, in regard to the rates of increase, fully confirmed the accuracy of the conclusions arrived at by Mr. Glover, and that his method of taking decennial periods gave sufficiently accurate average results. One very remarkable and signi-

ficant fact, to which his attention had been directed in the course of his investigations on this subject, was the very large and rapid increase in the tonnage of vessels. For example, he found that in the case of London, taking only the vessels engaged in the foreign and colonial trade, that whereas the average tonnage which entered the Port of London in 1855 in cargo and ballast was only 248 tons per vessel, it had increased in 1880 to as much as 527 tons per vessel, and this he found was so in the case of Liverpool, where the average tonnage had increased from 494 tons per vessel in 1855 to 934 tons in 1880; the same remark applied in the case of the other principal ports. What he wished more especially to draw attention to, and what naturally followed from the rapid increase in the size of vessels, was the urgent necessity which existed for largely increasing the size, and more especially the depth of our docks, in order to provide adequate accommodation for them. Taking London as an illustration, where very recently a large and spacious new dock, the Albert Dock, has been constructed; so rapid, however, has been the increase of the tonnage and draught of vessels which now find their way to the Thames, that already this magnificent dock is scarcely able to receive some of the largest sized steamers; and, as a consequence, there is at the present moment an effort being made still further to extend the dock accommodation of the Port of London, in the lower reaches of the Thames, at Tilbury; and he could not help thinking that instead of our now having, as the author expresses it, reached the top or crest of the wave, we are still at the present moment in that period of transition which marks the total abandonment of sailing vessels of comparatively small tonnage, and a further great departure in the construction of steam vessels of largely increased cargo-carrying capacity and draught of water, which he considered, by largely diminishing the cost of transport, was destined to give a great impetus to the ocean carrying trade of the world. So rapid of late has been the rate at which this substitution of steamers of large capacity for sailing vessels has been proceeding, that a leading Norwegian shipowner was obliged to admit the other day, that in spite of the rapid increase of the shipping in that country, and to which allusion had been made in the paper, he considered the time had at length come when his countrymen could no longer hope, with their small tonnage crafts, to maintain their competition with us as carriers on the ocean. The paper also brings out very strikingly another fact to which, in the course of his investigations, his attention has been directed, viz., that although the number of vessels had decreased, their cargo carrying capacity had increased in a very much higher ratio. There was no feature connected with this question of the increase of tonnage of shipping at our principal ports, which had so arrested his attention, as the great disproportion between the amount of the import and export tonnage of the Port of London. Everything in the way of trade naturally gravitates to London, its great centre, and the richest port of import in the world; considered, however, as an export port, it ranks very much below Liverpool—for example: taking the foreign export and import tonnage alone, he found that whereas in 1880 there were 10,842 vessels, with a total tonnage of 5,819,950 tons, which

entered the Port of London in cargo, there were only 6,375 vessels, with a total tonnage of 3,607,952 tons, which cleared in cargo—the balance, viz., 2,467 vessels, with a tonnage of 2,211,058 tons, being compelled to leave the Port of London in ballast to seek cargoes elsewhere, chiefly at Cardiff, Newcastle, and other of our principal coal ports. If the import and export coastwise tonnage be included, the contrast is still more striking, for whereas while it appears that in 1880, 49,904 vessels, with a total tonnage of 10,544,171 tons, entered the port of London, only 18,269 vessels, with a total tonnage of 6,024,937 tons, cleared, showing that 31,275 vessels, with a total registered tonnage of 4,429,235 tons, had left the Port of London in ballast in that year. That such an enormous amount of tonnage as this, more especially of foreign tonnage, should be obliged to find its way coastwise in ballast to seek cargoes either at Cardiff or the Tyne ports, was not only a discredit to London, but a source of great commercial loss, and were the necessary dock accommodation provided, he saw nothing that would not enable the Port of London very speedily to realise that exact equation or balance of its exports and imports so strikingly exemplified in the case of Liverpool. The contrast at present between the present accommodation afforded at these two ports was, in other respects, very remarkable, inasmuch as, by a singular coincidence, the respective dock areas at both places happen to be precisely the same, the available water area of all the docks in the Port of London in 1880 being 434 acres, while the water space area of Liverpool and Birkenhead was just 433 acres; the relative mileage of quayage, which was the true measure of the accommodation afforded by a dock, was, however, upwards of 10 miles greater in the case of Liverpool. There was this further striking difference, that while there were only 16,763 vessels, with a tonnage of 7,245,000 tons, which entered the Port of Liverpool in 1880, the clearance being almost exactly the same, namely, 7,251,000 tons, whereas in the case of London during the same period, there were as many as 49,904 vessels, with an aggregate registered tonnage of 10,454,171 tons, for which accommodation had to be provided, with only exactly the same amount of dock area. What was chiefly required in order to bring about an equation between the export and import tonnages at the Port of London, was coal tonnage. It was true that London is a long way from the coal fields, but having carefully gone into this question, he might state that the result of his investigation conclusively showed that coal from the South Wales collieries might be brought to the docks on the Thames at such a remunerative rate to the railway company as would not only largely add to its revenue, but by the increased inducement afforded to the import trade of London, it would indirectly increase the railway traffic. It is quite beyond dispute that the coal traffic constitutes one of the most profitable branches of railway traffic, standing, as it does, in relation to the goods traffic just as the third class passenger traffic stands to the passenger traffic. Taken roundly, the average rate for the carriage of coal on our principal railways is at present just $\frac{1}{2}d.$ per ton per mile, the cost of carriage even when debited with 65 per cent. of the total working expenses,

representing $\frac{1}{4}d.$ per ton per mile at the outside. There were so many important points in this most valuable paper, as really to render it impossible to do more than seize upon one or two of the more prominent. He had prepared a series of tables in connection with this tonnage question, which he should be very happy to hand in if they were thought worthy of a place beside the most valuable data which the author had furnished in his paper.

Mr. W. J. Harris said he should like to ask Mr. Glover one or two questions, and also to reply to Mr. Price Williams. He should like Mr. Glover to tell them something about the consumption of coal by steamships in comparison to what it was ten or twenty years ago. This had a very important bearing as regarded the success of our commercial navy, and his own impression was that the decrease in consumption had been very great. Was it the general opinion of those in a position to know, that far more power might ultimately be got out of coal than was now got, and was it therefore at all possible that the Suez Canal would not turn out of such enormous advantage to the shipping trade as was supposed—could not, in fact, the expense of the Suez Canal ultimately be saved by the fast steamers of the future making the voyage round the Cape of Good Hope to Bombay or Calcutta with only the same supply of coal which would now take them to Suez? That was his first question, and next he would say a few words in correction of one of Mr. Price Williams's statements. He mentioned that the dock accommodation of London was not sufficient, and instanced the Albert Dock as one that it would soon be necessary to supplement on account of the depth not being sufficient for steamships of the present day. I happen, Mr. Harris added, to be a director of that dock, and I beg to tell this meeting that we have never yet refused a steamer. Our depth of water is quite sufficient: the *Orient* steamer (one of the largest afloat) comes every voyage, and her owners are quite satisfied. Even if steamers were built drawing a considerably greater depth of water, we could easily give them two or three feet more depth by the simple operation of pumping, and thus make it deep enough; but it is not likely that steamships of increased draught will be built, as they would not be able to pass through the Suez Canal. I mention this because Mr. Williams's assumption that the Albert Dock is not sufficiently deep for vessels now being constructed, might be published in the report of this meeting, and if so it would convey an impression which is entirely incorrect. Mr. Harris then proceeded to notice the remarks in the paper with reference to the very large business done in shipbuilding. This business had doubtless increased far more than any other which England had engaged in. In all other trades foreign tariffs had affected us, but in shipbuilding no foreign tariff had touched us. Consequently we had been able to increase our business four or five fold. In no other article of commerce had there been anything like the same rate of increase. He was one of those who believed that foreign tariffs affected us very adversely, and that we should see many of our manufactures decline and dwindle away in consequence. He trusted we should continue to maintain our position

as the first shipbuilders in the world, and that foreign nations would have to buy from us. He very much doubted whether the profits on the steam carrying trade at the present time were so large as they were ten years ago, on account of the lower freights now current, and whether the profits on the sailing ships which trade with foreign ports were so large either—taking in stores and buying coals abroad, hiring foreign sailors, were all expenses which must be deducted; and in case anything happened to the ship, it often had to be repaired abroad; and there were the Suez Canal dues and various other charges which he need not attempt to enumerate, all of which eat up the profits. He would like to say one word of warning to any shipowners who might happen to be present. It was necessary to remember that there had been very deficient grain crops in Europe during the past three or four years, and that the grain required to make good the deficiency had employed an enormous amount of tonnage, which would not, he hoped, be required again to the same extent. If there were good average crops, at least two or three million less tons of grain would be required to be carried from producing countries to western Europe. It was an important consideration, and the deduction of such an enormous amount on one article alone might turn profits into losses, and particularly so when we also remembered what Mr. Williams had told us as to such a large amount of tonnage being even now entered in ballast. Mr. Glover had given the number of men employed on the sea at 180,000, but he feared it had been overstated. Mr. Glover had taken in the coastwise sailors, not employed in foreign trade, and who would be employed whether there were any foreign trade or not. He doubted whether the figure should not be 100,000 or 90,000.

Mr. Giffen pointed out that the so-called "home" trade in the returns was not merely coasting, but included what was really foreign trade, and the deduction for those employed coastwise only would really be inconsiderable. The so-called foreigners employed would also be for many economic and statistical purposes the same as British subjects, their wages being mostly paid in this country. The returns, moreover, did not include "masters," so that the figure of 180,000 or 190,000 might well stand as the number of men employed in the foreign trade of the British mercantile fleet. [See note subjoined.]

Mr. Harris resumed: The outlay abroad I maintain is a very important part of the gross earnings. The net earnings are very much less than the gross. Let me give you a case in point. A steamer from London to Calcutta pays the Suez Canal dues of at least 10*s.* per ton, including pilotage. In Calcutta or other foreign ports she buys coal for her homeward voyage, and there are various port expenses in Calcutta and elsewhere for loading and unloading and also for purchasing stores. The only way in which to calculate the real gain to England is to deduct the various costs of the voyage which are paid abroad, and all wages paid to foreign sailors, and I believe the result will be found to be very much less

than is generally supposed. Steamships carrying coal or iron from English ports to India generally earn less freight than the amount spent in foreign ports on the voyage out, in fact, the outward voyage is made without profit in order to gain the inward freight.

Mr. Giffen said: In regard to what Mr. Harris has said regarding the earnings of the fleet as bearing on the question of the balance of trade, I have just a word or two to say: I said the gross earnings, less what was actually spent abroad. Of course, the question is just what is the expenditure abroad? I am bound to say on that point that I believe the figures are much smaller than Mr. Harris's remarks would indicate, *e.g.*, he gives the cost to a ship of buying coals at Calcutta, but he must consider that some British ship has taken those coals there, and British commerce gets the carriage of the coal from Cardiff. [Mr. Harris: And yet that same carriage has to pay the Suez Canal dues.] But still many ships go to Calcutta which do not go through the Suez Canal. Some ship must be employed, and in the question of the general rectification of the balance of trade the amount of outlay abroad, even if some ships had to pay for coal at Calcutta, would be very small. I think that the amount would be only like somewhere about a sixth of the gross earnings of the fleet, if so much. The whole income of the Suez Canal from all ships is only about 2 million pounds.

Mr. C. Walford had just a word to say to the meeting upon the subject of "poor Jack," who had only incidentally been mentioned in the discussion. A pilot at Dover had told him, as a reason for so many foreign seamen being employed: "The vessels coming down the channel generally present this feature, every English sailor is drunk, including the captain, and if it were not for the foreign seamen many of the ships would never get out of the channel at all." Of course he had no personal knowledge of the fact, and only gave the statement for what it may be worth.

Mr. Glover said: I shall not venture to delay you long in replying to the criticisms which have been made. With regard to those by Mr. Bourne, I think my friend Mr. Giffen so completely justified the comparison of decades that I need not add more than a single word, and that is this: I compared three *decades*. It was not merely a comparison between 1870 and 1880, but between 1850 and 1860, and 1860 and 1870, thereby leaving ample room for any exceptional fact which was lost in the general comparison. My friend Mr. Bourne, like a good many other people, seemed to have a vision of something dreadful that may happen when the world generally was converted to free trade principles. With regard to the letter of Mr. MacIver, I should frankly say that I became a free trader from deep conviction that its principles were sound principles, and I should like to ask him, as he has asked me, a good many questions, if it is likely that further action on sound principles can hurt anybody. It seems to me that an economic principle, susceptible of very limited application, by that mere fact condemns

itself. So far from having any fear about the diffusion of sound principles in the British colonies and in the United States and on the continent of Europe having any disastrous effect in England, I believe that it would produce nothing but good both to them and us. Mr. MacIver inquires, in the first place, whether Mr. Glover's pecuniary interest as a shipowner is not like my own, distinctly in favour of maintaining our present system of so-called free trade? I should be very much obliged if Mr. Bourne will carry back my answer, and say, Yes; decidedly. My interest does consist in maintaining our present system, not a so-called free trade, but of so much as we have got, and we are going to extend it as fast as we can. I hope that further progress than what we have made during the last twenty years will be made on the continent of Europe. Do you mean by asking whether my interest favours it that it is not the public interest? I became a free trader because I was convinced of the soundness of the principle. The principle is not unsound because it happens to coincide with my interest. The second question is whether it does not suit me, as it suits him, to carry away coals, iron ore, pig iron, and so on, and bring back raw materials, to earn a double freight, or by bringing back some of these things in the shape of manufactured goods? Well, in the first place, it does suit me quite well to carry coals and pig iron and raw materials of every description when I can get a proper freight; and it suits me to earn a double freight whenever I get the chance. I am not in the habit of bringing back coals to this country, because it would be bringing coals to Newcastle. There is no country that exports coals here, neither do we import much iron. As to bringing raw materials; yes; a large quantity of wood is brought because we want it, and of cotton because we want it to spin, and other raw materials which we can put to economic use. We bring the articles not to oblige anybody, except ourselves. It *does* suit me, and my answer is "yes" to second question. Third. Whether it does not suit me, looking at the matter in a selfish point of view (which I entirely decline to do; that is a very miserable way of dealing with any public matter; if any question of policy will not stand a higher test than a man's own pocket, it is not worth anything at all, though the mere circumstance that it may suit my pocket is beside the question) whether it does not suit me that our home agriculture should be ruined as quickly as possible in order that we may continue to import food at good rates of freight? My answer is, *Certainly* not. The greatest industry of this country is the agricultural industry, and it suits the English people that our big industries and our little industries should be all in good health, and it was certainly a queer thing for a shipowner to suggest it. I answer, No. He asks one more question: Whether well managed steamers of a class adapted for this kind of work are earning large profits, and elbowing those out which were adapted to a former state of things? In other words, Are new tools superior to old ones? In other words, Are we to keep pottering away in antiquated machines instead of constantly improving our vessels and making the best use of our latest ideas? Anyone who uses tools must be constantly

improving his tools if he means to keep his business. Mr. Giffen used some very complimentary observations which I do not think I deserve. As to Mr. Williams's proposal to make London a coal port, only one word. The effort we are making now in all directions to bring the carrying machine as close as possible to the commodity, to bring coals to London to put into ships, is very nearly as mad, as contrary to sound economy, as to take coals to Newcastle. Notwithstanding the proposed increase of docks in London, I do not think any move of that sort is in sight. It is quite a mistake to think that it is the want of dock accommodation in London that interferes with extension of its traffic—quite a mistake. Mr. Harris asks about the consumption of coal. I am glad to be able to say that according to the best authorities, during the last decade the consumption of coal per horse power was reduced by from 15 to 20 per cent. In steamers the exact figures give over a series of investigations under 15, but taking into consideration other circumstances which belong to the question, the reduction will be about 20. The actual consumption per horse power during the decade is less at the end than the beginning by from 18 to 20 per cent. But notwithstanding that the consumption of coal per horse power has decreased to this large extent, there is no doubt whatever that our present engines exert a useful force of a very small extent compared with the force latent in the fuel, *i.e.*, if the force latent in the fuel is represented by 100, the useful force exerted by the best engines is not 5, so that in driving the engine you utilize only 5 per cent. of the force you have latent in the coal consumed. That is leading people in all directions to other methods of propulsion and other methods of utilising the forces we have in coal, so as to avoid the waste thus caused. Whether we are on the eve of some other method is very difficult to say. Mr. Harris asks whether ships pay. I answer by asking, Does he believe, as a man of business, that the enormous development of tonnage would have taken place if it had not paid? [Mr. Harris: I said that new ships pay, but I did not believe that the majority of old ships paid.] On the same principle you might object to old *men*. Mr. Harris alludes to the progress of tonnage as an illustration of the advantage to us of a foreign tariff. Is that quite clear? If I am under a correct impression, the tariff of France is most unfavourable to us as shipbuilders, the tariff of America will not allow a ship built in this country to attain the distinction of stars and stripes at the mast head. It does not seem that the facts justify that observation at all. We have been successful as shipbuilders, because whereas vessels were formerly built of wood, they are now built of iron on our own premises. That is the reason, and not of the operation of any foreign tariff: it is in spite of a great deal of opposition abroad that we won this position. Mr. Harris also says that even if it were profitable to us as shipbuilders, he is not quite sure that it is profitable to us as a nation; to which I beg to reply that it is vital in the very last degree to us as a nation in two respects. We cannot do without it as a great maritime power. The naval power of England is absolutely dependent on our being at the same time great builders, so that we may have control of the sea, and have

great facility to move troops whenever necessary. It seems to me that, as a nation, we cannot exist except as a great naval power. It is essential, therefore, as a matter of fact, that our naval and political power is dependent on our navy. I could not at all understand some remarks made about building. Someone seemed to think that it was a terrible thing to think of three-quarters of a million of tonnage being built, but I beg to assure those who have that fear that, owing to the immense advantage which this country has from the production of ships, the tonnage of the British colonies and over a large part of Europe and America is concentrated here,—consequently there is a great appearance of activity, not for ourselves, but for the whole world. It is an advantage for us, and we are able to produce an article that is wanted, cheaper than anybody else. One single word more: an observation on which I wish to state a correction. I understand Mr. Harris to say that all our building was not doing more than overtaking our losses. We have actually fewer ships under our flag than so many years ago. May I read a sentence in answer to that remark? "In 1881 there were 244 more vessels lost, broken up, and sold to foreigners, belonging to the United Kingdom, than were registered and built during that year." That seems a confirmation of the observation of Mr. Harris: the remainder of the sentence supplies the answer. "Although 244 fewer vessels were built, the tonnage of those built exceeds that of those lost by 394,000 tons." The increase in steamer tonnage alone in 1881 on the list in 1880 shows a balance of gain of over half a million of tons, viz., 518,000 tons. Therefore, to say that our building scarcely replaces our losses is to forget that circumstance to which I have alluded. We have at least a gain of three to one in effective carrying power. I have to apologise for occupying your time so long, and sincerely to thank you for the patience with which you have listened to what I fear has been rather a dry story, but I can assure you it raises some very great principles, and illustrates a matter of very great importance.

The President said: It is my pleasing duty to ask you to join with me in a cordial vote of thanks to Mr. Glover, for the extremely interesting and able statement which he has read to us to-night. It has been followed by a good discussion, and an excellent reply to the observations and criticisms passed upon his paper. There is one point upon which I should like to say a single word, and that is in regard to the charge for the cost of transport of live cattle from America to Liverpool, and from Liverpool to London. I believe the charge from America to Liverpool includes the feeding of the animal, but the transport from Liverpool to London has no such expense attending it. The contrast is between the cost of transporting the American and English animal, the advantage being all in favour of the foreign importer. It seems very unfair that English railway companies, which have obtained from Parliament a monopoly of the railway traffic, should turn this weapon which they have so obtained against the native producer. That is a wrong which certainly ought to be rectified. I request that you will join with me in a most cordial vote of thanks to Mr. Glover for his very

able and instructive exposition of the wonderful growth and commanding position of our merchant navy, one principal source of our commercial pre-eminence, worthy of a great maritime nation,

> "Whose march is on the mountain wave,
> Whose home is on the deep."

Note.—With reference to the point raised by Mr. Harris (see above pp. 70 and 71) as to the number of seamen in the British mercantile fleet employed in the foreign trade, it may be expedient to state the exact figures from the official returns, so as to prevent the *Journal* of the Society giving the impression that figures are disputable which are really beyond dispute. There is absolutely no foundation for the idea that the number of British seamen employed in the foreign business of the British mercantile fleet is reducible from an apparent figure of 180,000 to one of 100,000 or 90,000, which Mr. Harris actually suggested. In the first place, the apparent figure of men employed in the mercantile fleet, both foreign and coastwise, including foreigners, is not 180,000 but 193,000. This figure, moreover, does not include masters, and as there are at least 17,000 vessels (see above table, p. 50), we must add that number to the above 193,000, making a total of 210,000. Next, the two deductions suggested are for those employed coastwise, and for foreigners. In regard to the former, it is assumed that the 50,000 shown by the returns to be employed in the so-called home trade, are employed coastwise; but this is a mistake; the "home" trade includes trade with a large part of the continent as well as the coasting trade. The deduction for men employed, coastwise, instead of being 50,000, is probably not a half or a third of that figure. With regard to the second deduction, viz., for foreigners, the exact number of foreigners employed in the mercantile fleet shown by the returns is about 24,000. Of these, however, the greater part, for many economic and statistical purposes, must be treated as British subjects, the crews being engaged, paid, and discharged in home ports. The deductions to be made consequently from the apparent figure—not of 180,000, but of 210,000 men employed in the British mercantile fleet—on the ground of some being employed coastwise and of others being foreigners, are really inconsiderable. The returns, it should also be stated, are those of seamen actually known to be employed, so that no deduction has to be made for non-employment, as if the record had been one of seamen registered whether they were employed or not. The returns, moreover, relate to vessels belonging to the United Kingdom only, and do not include British seamen engaged in vessels on colonial registers.—EDITOR.

The following are the tables referred to by Mr. Price Williams

Total Tonnage of Vessels Entered and Cleared in Cargo and Ballast to and from Foreign Years 1855, 1860, 1865, 1870,

LONDON.

Year.	Entered.											
	Number of Ships.	Foreign Countries and British Possessions.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Coastwise.	Rate of Increase per Cent. per Annum.	Number of Tons per Ship.	Number of Ships.	Total.	Rate of Increase per Cent. per Annum.	Number of Tons per Ship.
	No.	Tons.		No.	No.	Tons.		No.	No.	Tons.		No.
1855	9,770	2,420,586	—	248	19,048	2,852,223	—	150	28,810	5,272,809	—	183
'60	11,177	2,981,410	4·26	267	18,365	3,154,561	+ 2·04	172	29,542	6,135,971	3·08	208
'65	11,610	3,646,142	4·11	314	14,923	3,065,380	− 0·57	205	26,533	6,711,522	1·81	253
'70	11,009	4,089,366	2·32	371	12,793	2,849,872	− 1·45	223	23,802	6,939,238	0·67	292
'75	11,311	4,910,533	3·73	434	31,458	3,823,386	+ 6·05	122	42,769	8,733,919	4·71	204
'78	11,383	5,345,281	2·87	470	36,345	4,071,172	+ 1·26	112	47,728	9,416,453	2·54	197
'79	11,292	5,690,288	6·45	503	37,588	4,301,170	+ 1·85	114	48,880	9,991,458	6·11	204
'80	11,320	5,970,341	4·92	527	38,584	4,483,830	+ 4·28	116	49,904	10,454,171	4·63	209
			7)28·66				+ 15·45 − 2·02				7)23·55	
							7)+ 13·43					
Increase per cent. per annum			4·09	—	—	—	+ 1·92	—	—	—	+ 3·37	—
Increase per cent. per annum between 1855 and 1880, initial and terminal periods			3·68	—	—	—	1·83	—	—	—	2·78	—

LIVERPOOL.

1855	4,197	2,074,168	—	494	8,434	1,336,106	—	158	12,631	3,410,274	—	270
'60	4,902	2,773,439	5·95	566	8,898	1,493,067	2·25	168	13,800	4,266,506	4·58	309
'65	4,827	2,644,821	− 0·94	548	7,780	1,597,626	1·13	203	12,607	4,224,447	− 0·20	335
'70	5,058	3,416,933	5·26	676	7,262	1,601,658	0·28	221	12,320	5,018,591	3·50	107
'75	5,481	4,402,116	5·20	803	9,119	2,027,752	4·83	222	14,600	6,429,868	5·08	440
'78	4,844	4,403,299	0·01	909	10,639	2,290,257	4·14	215	15,483	6,693,556	1·35	432
'79	4,845	4,584,132	4·11	946	11,106	2,358,701	2·99	212	15,951	6,942,833	3·72	435
'80	5,263	4,913,324	7·18	934	11,500	2,331,903	− 1·14	203	15,028	7,245,227	4·36	458
			+ 27·74 − 0·94				+ 15·62 − 1·14				+ 22·59 − 0·20	
			7)26·30				7)14·48				7)22·39	
Increase per cent. per annum			3·83	—	—	—	2·07	—	—	—	3·26	—
Increase per cent. per annum between 1855 and 1880, initial and terminal periods			3·51	—	—	—	2·25	—	—	—	3·06	—

in his remarks during the above discussion:—

Countries, British Possessions, and Coastwise (as per Board of Trade Returns), for the 1875, 1878, 1879, *and* 1880.

LONDON.

Cleared.												
Number of Ships.	Foreign Countries and British Possessions.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Coastwise.	Rate of Increase per Cent. per Annum.	Number of Tons per Ship.	Number of Ships.	Total.	Rate of Increase per Cent. per Annum.	Number of Tons per Ship.	Year.
No.	Tons.		No.	No.	Tons.		No.	No.	Tons.		No.	
7,840	1,948,699	—	261	8,483	878,182	—	104	15,963	2,826,881	—	177	1855
8,341	2,294,633	3·32	275	8,818	1,077,004	4·17	122	17,159	3,371,637	3·59	196	'60
8,093	2,627,809	2·75	325	8,035	1,121,864	0·82	140	16,128	3,749,673	2·15	232	'65
7,912	3,026,916	2·87	391	9,125	1,203,592	1·42	132	17,037	4,230,508	1·97	248	'70
8,553	3,915,182	5·28	458	9,264	1,318,534	1·84	142	17,817	5,233,716	4·35	294	'75
8,782	4,389,064	3·88	500	9,981	1,403,918	2·12	141	18,763	5,792,982	3·44	309	'78
8,562	4,431,921	0·97	518	9,790	1,378,058	−1·81	141	18,352	5,809,979	0·29	311	'79
8,541	4,606,641	3·94	539	10,088	1,418,296	2·92	141	18,629	6,024,937	3·70	323	'80
		7)23·01				+ 13·29 − 1·82				7)19·49		
						7)11·47						
—	—	+ 3·20	—	—	—	+ 1·64	—	—	—	2·78	—	
—	—	3·50	—	—	—	1·94	—	—	—	3·07	—	

LIVERPOOL.

4,483	2,223,044	—	496	9,032	1,277,565	—	141	13,515	3,500,609	—	259	1855
5,358	2,899,474	5·46	541	10,556	1,460,850	2·72	138	15,914	4,360,324	4·49	274	'60
4,425	2,631,827	− 1·92	595	7,860	1,378,878	− 1·15	195	12,285	4,010,705	− 1·66	326	'65
4,778	3,356,138	4·98	702	8,436	1,503,928	1·75	178	13,214	5,860,066	7·88	443	'70
5,184	4,378,203	5·46	845	8,917	2,016,504	6·04	226	14,101	6,394,707	1·76	453	'75
4,714	4,387,894	0·07	931	10,317	2,277,938	4·15	221	15,031	6,665,832	1·39	443	'78
4,508	4,419,777	0·73	980	10,819	2,338,957	2·68	216	15,327	6,758,734	1·39	441	'79
4,878	4,746,489	7·39	973	11,336	2,504,648	7·08	221	16,214	7,251,137	7·29	447	'80
		+ 24·09 − 1·92				+ 24·42 − 1·15				+ 24·20 − 1·66		
		7)22·17				7)23·27				7)22·54		
—	—	3·17	—	—	—	3·32	—	—	—	3·22	—	
—	—	3·08	—	—	—	2·73	—	—	—	2·96	—	

Total Tonnage of Vessels Entered and Cleared in Cargo and Ballast, to

CARDIFF.

Year.	Entered.											
	Number of Ships.	Foreign Countries and British Possessions.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Coastwise.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Total.	Rate of Increase per Cent. per Annum.	Tons per Ship.
	No.	Tons.		No.	No.	Tons.		No.	No.	Tons.		No.
1855	1,433	285,206	—	199	5,101	358,741	—	70	6,534	643,947	—	98
'60	1,246	307,409	—	247	2,396	183,963	—	77	3,642	391,372	—	107
'65	1,585	433,507	—	274	2,848	237,918	—	84	4,433	671,425	—	151
'70	2,253	765,198	—	340	2,994	284,003	—	95	5,247	1,049,201	—	200
'75	2,513	932,153	—	371	7,164	815,588	—	114	9,677	1,747,741	—	180
'78	3,563	1,484,676	—	417	9,173	1,651,105	—	180	12,736	3,135,781	—	246
'79	3,754	1,703,478	—	454	8,589	1,584,133	—	184	12,343	3,287,611	—	266
'80	4,212	2,056,601	—	488	9,119	1,883,569	—	207	13,331	3,940,170	—	296
Increase per cent. per annum between 1855 and 1880			8·22	—	—	—	6·86	—	—	—	7·52	—

NEWCASTLE.

1855	3,836	595,890	—	155	2,335	259,134	—	111	6,171	855,024	—	139
'60	4,432	728,470	—	164	2,696	307,900	—	114	7,128	1,036,370	—	145
'65	4,546	914,819	—	201	2,907	412,199	—	142	7,453	1,327,018	—	178
'70	4,945	1,232,555	—	249	3,288	427,794	—	130	8,233	1,660,349	—	202
'75	5,112	1,623,386	—	318	Included in Tyne ports and cannot be separated				—	—	—	—
'78	4,314	1,500,377	—	348					—	—	—	—
'79	4,353	1,582,152	—	363					—	—	—	—
'80	5,025	1,879,100	—	374					—	—	—	—
Increase per cent. per annum between 1855 and 1880			4·70	—	—	—	—	—	—	—	—	—

HULL.

1855	2,058	414,839	—	—	1,117	126,724	—	—	3,175	541,563	—	—
'60	3,297	711,828	—	—	1,018	126,069	—	—	4,315	837,897	—	—
'65	3,055	842,586	—	—	1,151	143,583	—	—	4,206	986,169	—	—
'70	3,124	1,033,155	—	—	963	140,410	—	—	4,087	1,173,565	—	—
'75	3,284	1,392,937	—	—	1,525	278,259	—	—	4,809	1,671,196	—	—
'78	3,298	1,465,115	—	—	1,698	285,862	—	—	4,996	1,750,977	—	—
'79	2,740	1,367,863	—	—	1,477	269,646	—	—	4,217	1,637,509	—	—
'80	3,242	1,579,575	—	487	1,542	262,293	—	170	4,784	1,841,868	—	385
Increase per cent. per annum between 1855 and 1880			5·49	—	—	—	2·95	—	—	—	5·02	—

and from Foreign Countries, British Possessions, and Coastwise—Contd.

CARDIFF.

Cleared.												
Number of Ships.	Foreign Countries and British Possessions.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Coastwise.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Total.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Year.
No.	Tons.		No.	No.	Tons.		No.	No.	Tons.		No.	
2,724	609,121	—	224	5,662	415,781	—	73	8,386	1,024,902	—	122	1855
3,534	913,588	—	259	7,381	600,301	—	81	10,915	1,513,889	—	139	'60
3,877	1,131,067	—	292	7,779	662,723	—	85	11,656	1,793,790	—	154	'65
4,710	1,776,690	—	377	7,241	599,443	—	83	11,951	2,376,133	—	199	'70
4,564	1,934,903	—	424	6,028	526,474	—	87	10,592	2,461,377	—	232	'75
5,834	2,799,657	—	480	7,138	613,854	—	86	12,972	3,413,502	—	263	'78
5,720	2,920,131	—	519	6,958	635,613	—	91	12,678	3,555,744	—	280	'79
6,362	3,473,005	—	546	7,117	667,696	—	94	13,479	4,140,701	—	307	'80
—	—	7·21	—	—	—	1·91	—	—	—	5·75	—	—

NEWCASTLE.

6,488	1,152,953	—	178	10,679	1,498,682	—	140	17,167	2,651,635	—	154	1855
8,148	1,473,001	—	181	10,624	1,644,851	—	155	18,772	3,117,852	—	166	'60
8,012	1,779,838	—	222	9,804	1,871,147	—	191	17,816	3,650,985	—	205	'65
8,068	2,251,315	—	279	8,722	1,803,697	—	207	16,790	4,055,012	—	242	'70
7,732	2,745,974	—	355	Included in Tyne ports and cannot be separated			—	—	—	—	—	'75
6,705	2,569,222	—	383				—	—	—	—	—	'78
6,844	2,833,568	—	414				—	—	—	—	—	'79
7,645	3,274,499	—	428				—	—	—	—	—	'80
—	—	4·26	—	—	—	—	—	—	—	—	—	

HULL.

1,629	358,340	—	—	1,547	185,112	—	—	3,176	543,450	—	—	1855
2,517	569,466	—	—	1,582	228,245	—	—	4,099	797,711	—	—	'60
2,396	673,584	—	—	1,590	263,245	—	—	3,986	936,829	—	—	'65
2,489	874,518	—	—	1,580	265,525	—	—	4,069	1,140,043	—	—	'70
2,819	1,196,148	—	—	1,895	463,095	—	—	4,714	1,659,243	—	—	'75
2,855	1,307,650	—	—	1,947	480,564	—	—	4,802	1,788,214	—	—	'78
2,392	1,154,998	—	—	1,752	489,400	—	—	4,144	1,644,398	—	—	'79
2,777	1,312,136	—	472	1,894	523,868	—	277	4,671	1,836,004	—	393	'80
—	—	5·33	—	—	—	4·25	—	—	—	4·99	—	

Total Tonnage of Vessels Entered and Cleared in Cargo and Ballast, to

SUNDERLAND.

Year	Entered.											
	Number of Ships.	Foreign Countries and British Possessions.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Coastwise.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Total.	Rate of Increase per Cent. per Annum.	Tons per Ship.
	No.	Tons.		No.	No.	Tons.		No.	No.	Tons.		No.
1855	2,110	301,617	—	—	1,401	234,756	—	—	3,511	536,371	—	—
'60	2,552	446,898	—	—	1,357	122,539	—	—	3,909	569,437	—	—
'65	2,346	477,825	—	—	1,102	105,841	—	—	3,448	583,666	—	—
'70	2,702	624,681	—	—	815	80,104	—	—	3,517	704,785	—	—
'75	2,272	722,414	—	—	6,815	1,428,393	—	—	9,087	2,150,807	—	—
'78	1,710	588,992	—	—	7,985	1,778,581	—	—	9,695	2,367,573	—	—
'79	1,549	570,550	—	—	7,820	1,747,750	—	—	9,369	2,318,300	—	—
'80	1,996	702,597	—	352	7,727	1,806,288	—	234	9,723	2,508,885	—	252
Increase per cent. per annum between 1855 and 1880			3·44	—	—	—	—	—	—	—	—	—

SOUTHAMPTON.

1855	839	216,040	—	—	1,685	186,731	—	—	2,524	402,771	—	—
'60	1,089	326,735	—	—	1,803	275,703	—	—	2,892	602,438	—	—
'65	1,458	412,359	—	—	1,684	237,162	—	—	3,142	649,521	—	—
'70	1,665	565,884	—	—	1,489	235,876	—	—	3,154	801,760	—	—
'75	1,751	702,753	—	—	6,215	405,623	—	—	7,966	1,108,376	—	—
'78	1,896	904,865	—	—	7,596	536,899	—	—	9,492	1,441,764	—	—
'79	1,765	831,825	—	—	7,628	563,584	—	—	9,393	1,395,409	—	—
'80	1,782	856,216	—	480	7,439	560,136	—	75	9,221	1,416,352	—	154
Increase per cent. per annum between 1855 and 1880			5·66	—	—	—	—	—	—	—	—	—

BRISTOL.

1855	567	130,034	—	—	5,210	400,587	—	—	5,777	530,621	—	—
'60	898	235,908	—	—	6,849	473,666	—	—	7,747	709,574	—	—
'65	897	233,785	—	—	6,561	505,145	—	—	7,458	738,930	—	—
'70	1,119	348,556	—	—	7,587	563,352	—	—	8,706	911,908	—	—
'75	1,253	402,234	—	—	8,733	664,208	—	—	9,986	1,066,442	—	—
'78	1,090	444,559	—	—	7,907	644,443	—	—	8,997	1,089,002	—	—
'79	1,030	467,620	—	—	8,239	671,209	—	—	9,269	1,138,829	—	—
'80	1,062	515,922	—	486	8,683	712,820	—	82	9,745	1,228,742	—	126
Increase per cent. per annum between 1855 and 1880			5·67	—	—	—	—	—	—	—	—	—

and from Foreign Countries, British Possessions, and Coastwise—Contd.

SUNDERLAND.

Cleared.												
Number of Ships.	Foreign Countries and British Possessions	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Coastwise.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Number of Ships.	Total.	Rate of Increase per Cent. per Annum.	Tons per Ship.	Year.
No.	Tons.		No.	No.	Tons.		No.	No.	Tons.		No.	
2,554	408,106	—	—	11,098	1,374,697	—	—	13,652	5,482,803	—	—	1855
3,488	696,371	—	—	11,867	1,602,635	—	—	15,355	2,299,006	—	—	'60
3,356	788,448	—	—	9,930	1,463,986	—	—	13,286	2,250,434	—	—	'65
3,140	813,550	—	—	9,362	1,488,523	—	—	12,502	2,302,073	—	—	'70
2,691	930,469	—	—	6,411	1,312,455	—	—	9,102	2,242,924	—	—	'75
2,035	780,935	—	—	7,616	1,650,421	—	—	9,651	2,431,356	—	—	'78
1,717	692,148	—	—	7,834	1,704,385	—	—	9,551	2,396,533	—	—	'79
2,118	842,954	—	398	7,482	1,745,666	—	233	9,600	2,588,620	—	—	'80
—	—	2·94	—	—	—	—	—	—	—	—	—	

SOUTHAMPTON.

835	260,282	—	—	1,123	70,294	—	—	1,958	330,576	—	—	1855
976	333,337	—	—	723	36,147	—	—	1,699	369,484	—	—	'60
1,354	404,276	—	—	618	30,572	—	—	1,972	434,848	—	—	'65
1,523	494,235	—	—	743	36,281	—	—	2,266	530,516	—	—	'70
1,657	685,987	—	—	6,165	420,932	—	—	7,822	1,106,919	—	—	'75
1,690	747,766	—	—	7,601	607,976	—	—	9,291	1,355,742	—	—	'78
1,569	727,443	—	—	7,651	590,393	—	—	9,220	1,317,836	—	—	'79
1,620	768,989	—	475	7,218	575,377	—	80	8,838	1,344,366	—	152	'80
—	—	4·43	—	—	—	—	—	—	—	—	—	

BRISTOL.

219	68,227	—	—	3,969	339,991	—	—	4,188	408,218	—	—	1855
298	84,039	—	—	4,425	356,255	—	—	4,723	440,294	—	—	'60
227	60,821	—	—	4,129	404,497	—	—	4,356	465,318	—	—	'65
290	83,314	—	—	4,311	421,357	—	—	4,601	504,671	—	—	'70
427	170,248	—	—	9,062	884,195	—	—	9,489	1,054,443	—	—	'75
478	227,059	—	—	8,373	860,020	—	—	8,851	1,087,079	—	—	'78
449	237,280	—	—	8,429	871,616	—	—	8,878	1,108,891	—	—	'79
456	278,277	—	610	8,952	936,805	—	105	9,408	1,215,082	—	129	'80
—	—	5·78	—	—	—	—	—	—	—	—	—	

The World's Progress *in* Trade *and* Industry.

We extract from the new edition of Dr. Von Neumann-Spallart's "Uebersichten der Weltwirthschaft"* the following interesting summary of the economic progress of the world in recent years:—

The latter part of the present century has witnessed many changes in the economic and industrial conditions of the majority of the civilised countries of the world, industries, arts, and manufactures having acquired a remarkable development; the more striking when we consider how rapidly the change has been effected. The progress made by individual States is easily traced by their degree of refinement and a study of their statistics, and from these it will be seen how quickly this transformation advances. Little less than a century ago the industries of certain countries and States were isolated and estranged; at the present time they are to a very great extent united. It is not so long since that burdensome restraints were placed upon internal intercourse by reason of monopolies which were in the hands of guilds and corporations. In addition to this, staple rights and traffic rights, privileges which were granted to certain townships, had also the effect of restricting the progress of national, and in a far greater degree of individual, industries and trade. In some of the central European countries this state of affairs continued until very recently, and even when the horizon gradually began to widen among some of the more enlightened nations, this isolation still continued, though within extended boundaries. It was, however, not so much an isolation of town from town as province from province, and many European countries formed the type of a narrow minded policy of seclusion in their economic life. It was only during the last decade that those administrative reforms were introduced which had the effect of causing the whole State to be recognised as a unit in respect of economic questions affecting the entire population. Soon after this important epoch in the history of economic progress, people became more sensible of the pressing need that existed of freeing commerce throughout the land from the burdensome restraints which had hitherto fettered it. As soon as the political horizon began to clear, the German States banded together and formed the Zollverein. Great Britain then proceeded to abolish protective tariffs; the continental States also, after a little time, reduced the existing high duties, repealed the guild and corporation laws, which until then had so paralysed trade, and endeavoured to enter into a species of political trades union with each other. It was not long

* Jahrgang 1880, Stuttgart. Verlag von Julius Maier, 1881.

before the European Governments, following the example set them by England and France in 1860, concluded a series of international commercial treaties, by which they reciprocally guaranteed to each other "most favoured" treatment, and the modifications which from time to time took place of the treaties which had been contracted in the period 1860-68 were generally in a favourable direction, and tended to minimise the domain of customs' exclusion. At the expiration, however, of these treaties, which had been concluded between the various countries, and which had proved a source of material advantage and profit to the contracting Powers, it has been admitted that a period of retrogression ensued. The treaties during latter years were not collectively renewed, and although in some cases the duties had been raised, yet there was no actual return to the old system of restrictive and prohibitive tariffs. The force of circumstances imperatively demands that commercial relations should remain undisturbed, and not suffer from restraints placed upon free importation into the respective countries. In connection with the close economic combinations of all civilised nations, there has in our time been an increasing effort to attain a similarity of conditions with reference to industry, justice, and administration. The unity of the most complex State relationships depends on the contents of numerous economic treaties. At first in Germany, and afterwards in certain other European States, railroad organisations were formed. By means of these enterprises goods and personal property were transported throughout the whole length and breadth of the land. Even in a far greater degree than railways, have the postal and telegraphic systems been the means of uniting not only the State but the entire world, and of making people of all nations neighbours in spite of distance. The world's postal circle, which extends nearly 1,300,000 square miles, and unites approximately 760 millions of people, is one of the happiest results of the development of commercial industries. In the same way, in 1865, the first steps were taken to establish an international telegraphic union, and the results in 1880 went far to prove that this union had been the means of breaking down the barriers of international commercial intercourse. Railway congresses, assemblies of a thoroughly cosmopolitan character, postal congresses, and the annual telegraphic congress—all enjoying official authority—have been the means of extending still further commercial relations. What they accomplish in the region of intellectual and material culture, is recorded in golden characters in the history of the world. They have proved, in a far greater degree than was anticipated, the means of promoting still further advancement in the economic conditions of the world. To them we owe the unity of the weights and measures on the basis of the metrical

system, the international system of goods transportation, and the adoption by entire groups of States of the same monetary standard, of which we have an example—first in the Austro-German monetary conference, then in the conference of 1865, known as the Great Latin Conference, and lastly in the Scandinavian monetary union. The adoption of a complete international system of weights and measures is a question the settlement of which cannot be long deferred; the only point upon which controversy is likely to arise is the settlement of the basis which is to be taken. There has already been established a similarity in the international laws of banking and exchange. This has been the means of affording greater security for the protection of international rights, and given also an impetus to the distribution of capital. As may be easily credited, at no period of the world's history has there been a time when the rapid circulation of capital between one nation and another has been more easily and expeditiously effected than at present. The movement of milliards now occasions no surprise, and it is perfectly consistent that in the case of English or French capital which circulates in Austria, Germany, Russia, Egypt, or in South America or Asiatic countries, any excess or deficiency may be provided for by credit drawn on Europe, in America, or India. Thus in the same way all commercial enterprises combine to assist in the development of cosmopolitan economy; railways, posts, and telegraphs being the outward sign of this union. With these goes hand in hand the division of labour which conveys the production of the masses to its proper place in the world. With the ever increasing masses, the necessity of the world's production being considerably extended becomes a matter of the first importance, and there are now no barriers sufficiently strong to resist this universal demand. Administrative institutions must be so adapted that this century's legislation may be fixed on a firm and lasting basis. International relations have had the effect of creating an entirely new order of life, in which the industries of individual states, without detriment to their independence or individuality, must perform their share of the functions of the whole, of which they constitute a unit. The part then which in the world's economy is taken by individual States is of the greatest value, and though the present economic conditions of the world are not yet fully developed, they are sufficiently advanced to enable us to form an idea of their ultimate importance. Wonderful progress has been already made, and even if it be found that the improvements which have so far manifested themselves in these economic conditions will not be further advanced by the present generation, still there can be no question as to the excellent results of which they have already been productive. In all parts of the civilised world the growth of capital

has made rapid progress, and even during the commercial crisis of 1873, and the consequent depression, this progress, though certainly interrupted, was not wholly checked; and in seeking employment for these accumulated millions, when, for instance, sufficient profit was not obtainable in Europe by reason of a fall in the rates of interest, capital was diverted into other channels, and employed in foreign investments in far distant countries, which, though remote, yet offer a fair field for investment. In this manner inventions and enterprise have been universally stimulated. Another impetus also has been given to the economic progress of the world by the introduction of machinery and steam power.

As regards population, there has been in European countries such a vast increase, and at the present time this increase has assumed such abnormal proportions, that among many suggestions which have been made to check the great evil of over population, an evil which in the opinion of many exists in some places, an adoption of the Malthusian doctrine is advocated. The pressure of population has been such as to lead to a very great amount of emigration, thus annually diverting at the cost of Europe an enormous amount of capital and labour to other parts of the earth. Emigration and colonisation, though a bar to the progress of a national, yet stimulates the progress of the world's economy.

There are very many reasons which lead us to confidently predict that though there may be interruptions and checks to the ever increasing progress in the improvements of the world's economic conditions, these interruptions are of a purely temporary character, and must eventually be overcome. Industries and commerce, which have advanced with such rapid strides, and the vast amount of labour and capital which has been expended upon railroads, shipping, telegraphs, &c., have all given an impetus to the world's progress, and cannot fail to make a lasting impression upon it.

In order to thoroughly appreciate the changes which the world's economic conditions have experienced under the different natural, political, and social influences, as well as to estimate the reaction caused by crises, or periods of speculation, favourable or unfavourable harvests, wars, or revolutions, protection or free trade, and other important factors in determining the national prosperity, it will be necessary to arrange a broad and comprehensive system of statistics extending over a lengthened period. We have to deal with such a mass of complex individual elements, that only the consideration of the most important will lead us to any logical deduction. Social economy, commercial policy, finance, changes of administration, as also the specific influences of good or bad years, must be taken into account. In the investigation of a subject so complicated as the present, we must be satisfied with

very crude information; as it is impossible to obtain accurate and reliable data, we are obliged to depend in a very great measure upon inference and deduction. As a means of approximately estimating the extent of increase or decrease in material prosperity, it is advisable to take as a basis for the calculation, the income tax returns, affording as they do a certain indication of the position of national wealth.

In dealing with the subject of income and the national accumulation of capital, there have been already published in previous editions of this work a variety of comparative statements showing what has been in earlier years, the estimate of the world's producing power, and above all the extent of the accumulated wealth; and in order that this subject may be treated in as exhaustive a manner as possible, it will be necessary, without actually going over the same ground, to reproduce many of these statements, and also a variety of data which have been made use of from time to time in similar inquiries by many well known economists who have dealt with this important question. Among the nations which have contributed so enormously to increase the world's prosperity, Great Britain takes the foremost place, the growth of the national capital having since the commencement of the present century made very rapid strides. A reference to the income tax returns will show how great this annual increase has been. Mr. Dudley Baxter gives the income for the year 1814-15 as 146 millions sterling (according to the income tax assessments); in 1843 it amounted to 251 millions, while in 1865 it rose to 396 millions, and in 1875 to 571 millions; and according to the estimates formed by one of the most distinguished statisticians, Mr. Robert Giffen, the national wealth of Great Britain, which in 1865 amounted to 6,113 millions, rose in 1875 to 8,548 millions; thus exhibiting for the decennial period an increase of 2,435 millions sterling. Latterly, on account of the general depression which has prevailed, the annual increase of wealth is estimated only at 60 millions. Mulhall, in his work on the progress of the world, gives the following statement:—

[000,000's omitted.]

Years.	Authority.	National Wealth.
		£
1800.....	Beck and Pulteney	1,800,
'40.....	Porter.....	4,000,
'60.....	Leone Levi.....	6,000,
'79.....	Giffen	8,800,

And it will be readily conceded that the latter figures are rather under than over estimated, when we consider the fact that the

amount of British capital invested in Government securities and different companies, in railway and other industrial enterprises, is estimated by Mr. Giffen, in his paper on the accumulation of capital in the United Kingdom, at 2,788 millions, and by the "Banker's "Magazine" (March, 1881) at 3,465 millions. According to the income tax returns, the exempted incomes in 1845 were at the rate of 7*l.*, in 1855 11*l.*, and in 1875 17*l.* per head. According to the most recent calculations, however, the amount is estimated at about 33*l.* per head of the community. These figures will show at what an extraordinary rate the wealth of the country is increasing, and we may repeat that the estimates are rather below than above the mark.

As regards the progress of the national wealth in France, it appears from an examination of the data that the accumulation of capital has increased in the period 1848-71 from 50 to 60 per cent. M. L. Wolowski estimated the national wealth in 1871 at 150 to 200 milliards of francs, of which 120 milliards consisted of property in land and houses, so that this latter description of property has absorbed since 1851 about 20 milliards, or yearly one milliard of francs. This view of the national prosperity of France has also been taken by M. de Foville, after a critical examination of the estimates formed by M. Block, S. Mony, A. Amelin, Vacher, and other well known writers. He estimates the national wealth, after the loss of Alsace and Lorraine, at, in round numbers, 200 milliards of francs, and these estimates are fortified by the authority of Fehler, who agrees in the main with De Foville as regards the increase in the accumulation of wealth, which may be yearly estimated at 1,500 millions of francs.

There are so many insurmountable difficulties in the way of approximately estimating the increase in the national wealth of Germany, that a comparative statement is almost out of the question. The many political, administrative, and territorial changes which of late years have taken place, render it almost impossible to produce a comparison between its present position and that of earlier years; an idea, however, may be formed of the great progress made by this nation by a study of the value of the exports, which increased from 1,060 million marks in the year 1850 to 6,714 million marks in 1879. Another method of arriving at an approximate idea of the increase of public wealth is to take the amount of duties levied on all steam industries. Dr. Engel computes the actual assessed capital in the German Empire employed in these industries at 11,104 million of marks. Dr. Soetbeer, in his valuable work on the extent and distribution of wealth, though taking a somewhat pessimist view of the situation, states that in the kingdom of Prussia alone, during the period 1872-78—a period of industrial

stagnation—there was to be found a sensible increase in the national wealth, as the following table will show:—

[000,000's omitted in income column.]

Years.	National Income.	Per Head of Population.
	Marks.	Marks.
1872	6,969,	293,
'73	7,195,	299,
'74	7,532,	307,
'75	7,628,	311,
'76	7,857,	316,
'77	7,992,	315,
'78	8,069,	323,

As an indication of the increase of national income, if we estimate it simply from the income tax assessments, it will be seen that the tax paying income, which amounted in 1854 to 302 million marks, rose in 1878 to 957 millions—an increase of 300 per cent. It is evident, therefore, from an examination of Soetbeer's figures, that there has been a very considerable increase in the national wealth of Prussia. Among the remaining western European countries affording valuable materials for researches into this question of the growth of economic power, we will now take the case of Austro-Hungary. C. von Czœrnig, basing his calculations upon various statistical returns, estimates roughly the income derivable from land, mining, and other industries in 1859 at about 3,360 million florins; an unofficial publication issued in 1867 estimates it at 4,300 millions; and the figures for the year 1874, taking the very lowest estimate, may be reckoned at from 5,500 to 6,000 million florins. M. Falbe Hansen is of opinion that the national wealth of Denmark amounted in 1873 to 2 million reichsthalers, and M. Massalski estimates that of Belgium at 29 milliard francs; and as regards Sweden, it appears from a work which has been issued by an anonymous statistician, who has evidently devoted much care and attention to the subject, that its national wealth in the year 1876 amounted to $4\frac{1}{2}$ milliards kroners, or 4 milliards marks. Still more interesting than in European countries is a study of the remarkable progress which has been made in the economic conditions of the United States. This country possesses the data of regular valuations at every census, and from them we find that in 1790 the wealth of the then 3 millions of inhabitants was estimated at 750 million dollars, or an average of 187 dollars to each person. The decennial increase since that date is shown in the following table:—

Year.	Population.	Wealth.	Decennial Percentage Increase of Population.	Decennial Percentage Increase of Wealth.	Average Property to each Person.
		Dollars.	Per cnt.	Per cnt.	Dollars.
1790....	3,929,827	750,000,000	—	—	187
1800....	5,305,937	1,072,000,000	35·02	43·0	202
'10....	7,239,814	1,500,000,000	36·43	39·0	207
'20....	9,638,191	1,882,000,000	33·13	25·4	195
'30....	12,866,020	2,653,000,000	33·49	41·0	206
'40....	17,069,453	3,764,000,000	32·67	41·7	220
'50....	23,191,876	7,136,000,000	35·87	89·6	307
'60....	31,500,000	16,159,000,000	35·59	126·42	510
'70....	38,558,000	30,069,000,000	22·00	86·13	776

Here also is to be found the same peculiarity which characterises the progress of the national wealth of Great Britain, namely, the gradual and steady increase previous to the year 1840, when a much more rapid progress was made, attaining its maximum in the period 1860-70. It is at present too early a date to arrive at a definite result of the census of 1880, but it will be seen from an examination of the data already at hand, that there has been in recent years a most remarkable development of the resources of this country, and a very considerable addition to the national wealth, and until we are in possession of more complete data, we must be content with a study of the figures relating to the last four years, which have been published by the Treasury Department, and these all tend to show to what a vast extent the national prosperity has increased :—

[000,000's omitted.]

	1st March in each Year.			
	1878.	1879.	1880.	1881.
	Dollars.	Dollars.	Dollars.	Dollars.
Public revenue	265,	262,	308,	356,
„ expenditure	218,	235,	280,	257,
Net debt	2,042,	2,026,	1,995,	1,880,
Interest on debt.....	92,	101,	82,	77,
Balance in hand.....	72,	144,	150,	161,
Gold and bullion in Treasury	122,	133,	147,	173,
Silver in Treasury	8,	36,	62,	84,

It would be impossible to find in the financial position of any secondary State such striking evidence of the increase of national wealth as is discernible in the above figures. The figures which we have already quoted will be sufficient to convince every one of the very remarkable universal increase which has taken place in national wealth during the latter part of the present century, both incomes and capital having increased in a much more noticeable degree during this period than in any other; and we will now proceed to an examination of the causes which have contributed to this vast increase of wealth, and this is a subject which cannot be dismissed with a few words, but requires, in order to make it thoroughly clear and comprehensive, to be dealt with somewhat exhaustively. It will be our endeavour in the present review to show in as clear and concise a manner as possible, what have been the most important factors in determining the remarkable development of national wealth. One of the chief points to be considered is the influence exercised on the economic conditions of the world by the introduction of machinery and its substitution for manual labour, which is one of the growths of the present century. The importance of the wonderful inventions and improvements which have taken place are visible in the effect which they have had upon the increase of capital invested in machinery, and which as an investment has far exceeded in profit that employed in manual labour. Then the application of steam, which has wrought so complete and entire a change in locomotion. As an indication of the vast amount of the world's capital which is invested in steam undertakings, we may mention that Dr. Engel, in one of his interesting publications, estimates the capital so invested, in round numbers, at 133 milliard marks, distributed as follows: 80 milliards in railways, 40 milliards in various steam undertakings, 5 milliards in sea-going steam ships, and the remainder in river steamers. The part then taken by steam as a motive power, and the introduction of machinery in the improvement of the economic conditions of the world, is of the very greatest importance. These inventions have been the means of causing a very large increase in the accumulation of national, and in a corresponding degree of the world's, wealth. Another important element which we must direct attention to is the development of the credit system, which has in all civilised parts of the world taken place during the last twenty-five years. This does not necessarily produce fresh capital, but it has the effect of facilitating the better application of capital which is anywhere disposable: floating capital is collected and is brought into more permanent forms of investment. Deposit banks, savings banks, and credit institutions, and above all the general employment of bills of exchange, which have now become universally adopted, have all been the means of supplying

what was in earlier years a want much felt, and have become important factors in determining the augmentation of capital. The judicious operations of banking are mainly instrumental in rendering capital active and productive. It will be seen, by reference to the international savings banks statistics, published by the Italian Statistical Bureau in 1876, how vast the operations of savings banks were. From this work it appears that although these institutions were only established some forty or fifty years ago, yet in the year 1875 in Europe alone about 6,400 million of marks, and in the United States about 3,500 million of marks, making in round numbers a total of 10 milliard marks, had been invested. This is a sufficient indication of the influence exercised over the accumulation of capital by other and similar institutions, and tends to show how by this credit system activity and usefulness have been given to accumulations which without these benefits would have become mere hoards. And lastly, we come to the question of the maintenance of the working population; and here we cannot lay too much stress upon the necessity which exists of increasing and maintaining a national working population, this population in itself representing so much living capital.

We will now turn to another method of estimating prosperity, and attempt to determine its extent during a certain fixed period of time. This is a labour analogous to that which the science of meteorology has to set before itself in determining the peculiarities of weather in a certain neighbourhood. As climate depends on a great complexity of individual elements, so what we call the world's economy is the result of various factors, which act upon the material processes of life in a given population with greater or less power. In both cases, in the statistics of meteorology and economy, a similar analytical examination of the causes of a total impression have to be the object of investigation; but while meteorology deals with actual elements or factors of the present, such as atmospheric pressure, temperature, humidity, direction and force of wind, &c., while it possesses exact measuring instruments for the determination of these, and finally can supply itself with an endless series of exact observations, economic statistics must be satisfied with surrogates of the methods of natural science. In order to calculate upon the real elements of economic conditions when frequently remaining concealed, our investigation must often be satisfied with such appearances as lie upon the surface, and which in their nature are merely symptoms, and actually have themselves no ultimate effect on the sources and action of things. Besides this, even these symptoms cannot in the real significance of the word be measured or exactly expressed, but only individually employed for computations and numerical comparisons; and finally, the same primary

causes in the material life of culture have not the same effects among all nations and at all times. Thus even if we are able to point to more than mere symptoms, we shall have to be very careful in forming our conclusions, and cannot afford to overlook that almost all such results must in their very nature be empirical, that is to say, must depend upon laws which are only binding upon the given circumstances of space and time, and in no way permit us to generalise. The desired object, though comparatively limited, is nevertheless a difficult one to attain; it presents an array of operations which as regards physical science are superfluous, but are here indispensable. One of these operations consists in the choice of the most important, and of a study of the remainder of the accessible symptoms of the economic situation which are capable of being estimated. The symptoms then of the world's economy will be dealt with in the following pages. Another, which is an exact operation of measurement, consists, according to our theory, in the endeavour to deduce the type or normal course of the groups of facts or observations chosen as symptoms of the economic situation, which embrace definite periods. The establishment of the type will result in many cases in the choice of normal years as the point of comparison, and of the mean, in many other cases, by choosing the commencement or the end of the series, and taking the average of an entire period as the mean.

One of the many symptoms of the economic situation lies in the activity of railway enterprise, another in the study of failures. As regards the former, the statistical abstracts of Great Britain and Ireland publish regularly the number of passengers carried, and the total receipts of the different railway companies. Regarded as absolute factors these scarcely give more than a passing glimpse of the changing conditions; dealt with according to our method, however, they immediately present an interesting symptom. Neither the mean nor the normal year, nor the average of traffic activity could be accepted as a constant factor, but it seems to us the best, as in the case of statistics of prices, to take the commencing point of a period as the value of 100. On the contrary, according to our method, in the case of statistics of failures, the arithmetical mean serves best the purpose of a figure of comparison, and indicates the negative variation of a favourable symptom and the positive variation of an unfavourable symptom. The following is an example for the decade 1870-79:—

Year.	Number of Passengers Conveyed, per English Mile.				Total Receipts from Passengers and Goods Traffic per English Mile, in Pounds Sterling.				Number of Bankruptcies.		
	Number.	Ratio.	Increase or Decrease over Past Year.	Character of Individual Years as against the Type.	Value.	Ratio.	Increase or Decrease over Past Year.	Character of Individual Years as against the Type.	Number.	Ratio 10339=100.	Character of Intermediate Years as against the Mean.
1870	21,661	100·0	—	—	2,794	100·0	—	—	8,151	78·8	−21·2
'71	24,403	112·6	+12·6	+7·9	3,064	109·7	+9·7	+7·7	8,164	78·9	−21·1
'72	26,741	123·4	+10·8	+6·1	3,244	116·1	+6·4	+5·4	8,112	78·5	−21·5
'73	28,312	130·7	+7·3	+2·6	3,462	120·3	+4·2	+2·4	9,064	87·7	−12·3
'74	29,050	134·1	+3·4	−2·3	3,459	120·2	−0·1	−1·9	9,250	89·5	−10·5
'75	30,434	140·5	+6·4	+1·7	3,541	126·7	+6·5	+4·5	9,194	88·9	−11·1
'76	31,679	146·2	+5·7	+1·0	3,551	127·1	+0·4	−1·6	10,848	104·9	+4·9
'77	32,180	148·6	+2·4	−2·3	3,551	127·1	+0	−2·0	11,022	106·6	+6·6
'78	32,598	150·5	+1·9	−2·8	3,488	124·8	−2·3	−4·3	15,059	145·6	+45·6
'79	31,800	146·8	−3·7	−8·4	3,356	120·1	−4·7	−6·7	16,637	160·9	+60·9
Net average yearly increase			+4·68	—	—	—	+2·01	—	—	—	—

The deductions which may be drawn from this are clear. The positive and negative deviations of the individual years, in column 4, and the subsidence of bankruptcies, characterise as symptoms in a wonderful manner the season of commercial prosperity previous to the crisis of 1873; the prejudicial influence of this crisis, and especially the depression of the years 1876-79, may be considered as the most unfavourable symptoms in English national economy.*

There is scarcely any period which has been so characterised by a series of powerful reactions as that comprised between the years 1870-80. From 1870 until the middle of 1873 almost everywhere the progress of economic life could be clearly traced, and this was a period marked by a commercial crisis which made itself universally felt. There followed then a time of depression, lasting until the year 1879, when a reaction set in. This revival was experienced in the United States about the end of 1879, and at the commencement of 1880 was felt in the countries of Western Europe, Great Britain, the Netherlands, Belgium, France and Germany. The effects of this reaction were somewhat slow in manifesting themselves in European countries, those first experiencing them being Holland, England, Belgium, and France, while the German States, Italy, and Austro-Hungary were among the last. It will be impossible in a work of this description to pursue a complete analytical investigation into all the symptoms which are

* Since 1879, bankruptcy has again begun to decline in the United Kingdom, while part of the unusual increase just before 1879 is ascribed by the Controller in Bankruptcy to the gradual discovery of defects in our bankruptcy laws.—EDITOR of *Journal*.

likely to afford any indication of the position of economic progress. These symptoms must be considered in groups, which we shall classify as follows,—primary symptoms, secondary symptoms, and reflective symptoms; and as comprised in the first category we will proceed to deal with the question of the extent of production. There is no more reliable basis on which to determine the real economic position during a fixed period of time than that which lies in the activity manifested in producing power, and in considering this subject we must not lose sight of the fact that great discrimination is necessary to distinguish between the relative importance of these symptoms of increased production, for instance, we must enquire whether that particular branch of industry in which such expansion is visible, affects articles which are liable to extremes of activity and depression, and whether by this the decline of great industries is regulated; and again we must satisfy ourselves to what extent the improvements or the reverse are affected by the prevailing conditions of administration or government. As affording a certain indication of the position of economic progress, we will take the case of mining industries. Activity or stagnation here are certain symptoms of favourable or unfavourable position. Again, if we take the case of harvests, and the wheat productions of good and bad years, these, however, are affected by the weather, and are entirely dependent for their abundance upon the rain and sun in due season, and have only a casual and not what we should call a symptomatic character.

Let us now draw our deductions from the symptoms which manifested themselves in the period 1870-80. The whole of the more important industries of the world experienced from 1870 to 1873 a wonderful extension, and, as affecting the world's prosperity, this may be regarded as a token of the most favourable economic conditions. We will take as an example the enormous increase in cotton industries, and in mines and iron works. As regards the former, the number of spindles and looms have everywhere increased very considerably, and the quantity of yarn and woven goods exported from England, which amounted in 1870 to 942 million pounds, rose in 1873 to 1,078 millions. The value of cotton goods in the same period increased from 93 millions sterling to 104 millions—similar symptoms are everywhere visible in the industries of the whole world for the same period. As regards iron works, there was a considerable increase in the number of furnaces set up, and the total production of pig iron in the world rose from 11 million tons in 1870 to nearly 14 millions in 1873. Everything during this period in fact tended to prove that the world's prosperity was making very rapid strides. A change, however, was wrought by the commercial crisis of 1873, and the effect of this crisis was to

paralyse both the textile and iron industries, the statistics of the amount of production in each case showing a gradual but steady diminution. In the chief centres of the iron industry there were, at the end of 1876, 2,537 furnaces in existence, which were approximately capable of producing at the lowest estimate 20 million tons of iron; there were, however, but 1,329 of these furnaces at work, while 1,208 were at a standstill, and the quantity of iron produced amounted to only 280 million centners. Again, in 1878 we have very good authority for stating that it was a time of almost universal depression, as the statistical data which are given in another portion of this work will show. To demonstrate this more clearly, we will take the case of the most important of the great industries, namely, the cotton industries, which in Great Britain under favourable circumstances give employment to some 4 millions of people.* In the years 1876 and 1877, though there were large sales owing to great amount of stock having accumulated, the prices obtained were considerably below the market value. In 1878 there set in a complete cotton crisis, and the effects of this were more severe than any which had been experienced by the preceding generation. In the more firmly established houses the hours of labour were shortened, while in others business was entirely suspended, and there ensued a period of depression not only as regards England, but in fact the whole world, unparalleled in commercial history. According to Ellison's cotton reports the depression reached its climax during the first three months of 1879, when there was apparent an indication of a gradual revival of trade. The same features which characterised the cotton trade were apparent in woollen, silk, and linen industries—the depression in the two latter being more marked than in the former. It was only in the latter part of 1879 and in the beginning of 1880 that a sensible improvement was to be seen in most of the important industries—it was particularly noticeable in the coal trade, the increase in the production of this article in Great Britain, Germany, France, Belgium, and more especially in America (from 52 million tons in 1878 to 69 millions in 1880), may be assuredly taken as a certain indication of a steady improvement in the world's economic conditions. Soon afterwards, in the autumn of 1879, a stimulus was given to the production of iron in America, followed in a few months by renewed activity in the iron industries of Great Britain and most of the European countries. The fires which had been for some time extinguished were once more kindled, and the production of iron increased in one year at the rate of between 12 and 21 per cent. There was also renewed activity in the smelting and puddling works, and in fact towards the end of 1880 there was not

* This seems a great over estimate.—EDITOR of *Journal.*

only a marked but a general improvement in trade. The cotton industries of the world particularly exhibited signs of revival, and this may be accepted as a certain symptom of an amelioration of the economic position. Taking the case of spun yarn, the weekly production—which in Great Britain amounted in the year 1878-79 to 50,026 pounds, and on the continent to 47,352 pounds—rose in 1879-80 to 58,038 and 50,344 pounds respectively, thus showing an increase in this one article of 572,200 pounds, or nearly 12 per cent. in this year alone. The other branches of textile industries did not in the same degree exhibit such an improvement, yet it was evident that towards the close of 1880 unmistakable signs of improvement were not wanting; and as these industries which we have called attention to comprise three-quarters of the value of the entire production of the world, depression or activity in them forms an excellent indication of the actual prosperity of the world. As regards the extent of consumption, the increase or decrease in the consumption of articles which may be termed necessaries, such as breadstuffs, provisions, and clothing, are not such reliable signs of an improvement or the reverse in national prosperity, as the same fluctuations which may be observed in those articles which are not indispensable to man, and come under the heading of luxuries, as it is obvious that in a time of depression there would be a far more restricted consumption in the latter than would be found if trade and industries were flourishing and prosperous. We will again take the period of 1870-80 in which to form our conclusions as to the position of national wealth, judging from the extent of consumption, and though the data are of a somewhat meagre description, we will endeavour to show to what extent it was affected by it. If we look first at the consumption of coffee, tea, sugar, and tobacco, it would appear that the same indications are shown of material prosperity during the period of 1870-73, and that the effect of the commercial depression which followed this period did not so seriously affect the national wealth as might have been expected, the consumption being certainly to some extent limited, but in most countries only in a very slight degree. From 1878 to the end of 1879 seems to have been the most unfavourable time of the whole period. As an example of the consumption of coffee, the supply received in Europe in 1870 amounted to 4·98 million centners, in 1875 to 6·5 millions, and in 1878 it fell as low as 5·97 millions; it will be seen then that the supply in 1878, as compared with that of 1875, experienced a considerable falling off; a decrease in the consumption of this article was particularly noticeable in Italy in 1879-80, and in the United States in 1876-78. The great increase in the consumption of tea from 1870-74 was almost universal—it was only in 1878-79 that the consumption was first checked—and

the same may be said as regards tobacco. It appears to us that the most significant signs of improvement manifested themselves in 1880, and it was in America that this improvement was most marked—for instance, in the fiscal year 1879-80 the quantity of coffee imported amounted to 69 million pounds, or 1·4 pounds per head of the community; that of tea to 12 million pounds, or 0·25 pounds per head; tobacco leaf to 3 millions; wine, 6,394 million galions, and 1,303,356 bottles; and the American people retained in this year for home consumption about 130 million pounds more of refined sugar than they had done in previous years. In England, though this was a favourable year, yet the increase in luxuries was small, only cocoa, wine, and tobacco being consumed in greater quantities, whereas there was a decrease in tea, coffee, and sugar. An examination, however, of the returns of taxes for the last nine months of the year 1880, point conclusively to the fact that the economic position was substantially ameliorated. In France, the signs of increasing prosperity were more apparent than in England —a very considerable augmentation in the imports of coffee, sugar, and tea being perceptible in 1880—and although this year was not a very favourable one as regards the wine production, yet as a set off against this there were in 1880, 852,000 hectolitres more beer consumed than in 1879, and about 9,463 kilogrammes (valued at 9 million francs) of tobacco and cigars than in the previous years, and there are not wanting signs to show that this increase of material prosperity is not of a spasmodic character. A similar progress is also to be seen in Belgium; and finally we will take the case of Germany, where, in the year 1878, about 8·7 million marks more duty was paid on luxuries, such as sugar, tobacco, brandy, and beer, than in previous years, and this in connection with the information already given with regard to the imports of foreign produce, effectually removes all doubt as to the improvement in its economic position. Only in Italy is there to be found a slight indication of an unfavourable tendency, and in Austria there is an inference of the maintenance of the *status quo*.

No one who has studied the commercial statistics of the last decade, can fail to be impressed with the enormous increase which has taken place in the consumption of textile fabrics, iron, steel rails, and the production of other staple industries. To follow these in all their details would be out of place here; it will only be necessary to remark that they experienced a moderate rise dating from the year 1873, and a partial decline in 1880. As an American writer forcibly put it, the poor man in the time of depression wore his coat twice as long as he otherwise would, the rich man entertained less, and in many instances disposed of his horses and carriages; the tailor and the shoemaker complained that they had much to mend and but

little to make. As an illustration of this, we may mention that in England in 1878 about 26 million lbs. less wool and 897,588 lbs. less silk were consumed than in 1877, and besides this, all the warehouses were full of stock. The universal decrease in the consumption of these staple articles continued during the gloomy period 1874-79. The depression was of such a lasting character, and carried such disheartening effects in its train, that one hardly cared to inquire how it happened that such an unfavourable state of affairs, unbroken by any prospect of a speedy revival, could exist in central Europe and in America. With this restriction in consumption was associated a curtailment of profits and a consequent lessening of income, and when the horizon commenced to clear, and in 1879 the first ray of hope was to be seen, it was welcomed with a feeling of intense relief by all classes of the community. We will now see from the extent of commercial activity what conclusions may be formed as to the actual economic position; and it appears to us, after many years of patient observation, that the increased activity in commercial enterprises should assuredly be placed in the front rank of what we have called the primary symptoms, and if one follows the improvements which have during the last few years been made in railways, postal systems, telegraphs, banking, &c., one cannot fail to be impressed with their very vast importance as factors in determining the condition of the world's prosperity. Let us now take the question of railways. In all civilised parts of the world these have shown a very rapid increase from 1870 to 1873 or 1874, both in the number of passengers carried and in the quantity of goods conveyed, and as a natural consequence the receipts from both sources have greatly increased. From 1874 to 1878, and in many countries till 1879, there ensued a period of stagnation in railroad enterprise, and in fact to such an extent that not only were the effects more disastrous as regards industry, but great social dangers were apprehended. We have already given a statement showing the activity of railways in Great Britain, and if we had sufficient time and space at our disposal, we could supplement this with returns showing similar figures, for America, Germany, Austro-Hungary, France, and the Netherlands. As an example of the stagnation of industrial life in North America, we may state that the loss to holders of scrip in bankrupt or worthless railways in 1877 is estimated in round numbers at 1,000 million dollars, and that they were powerless to prevent the fearful strike which happened on the Ohio and Baltimore Railway on 16th July, 1877, and which caused such a lamentable loss of life. It was only in 1879 or the beginning of 1880 that an improvement manifested itself in railway enterprise, and the revival was first experienced in the United States. In Great Britain, France, Belgium, and Austro-

Hungary the traffic receipts began gradually to increase; it was only in Italy that a similar impulse does not appear to have been given.

In shipping, the same features are to be seen as those which characterised railway enterprise. Again taking the years 1870-80, we notice the same peculiarities in this particular branch of industry, the fluctuations in the number and tonnage of vessels built, the increase or decrease in the tonnage entering and clearing, and the amount of their cargoes, all these will show in what condition the world's prosperity was. The postal and telegraphic statistics are not of such valuable assistance as symptoms of the periodical favourable or unfavourable condition of economic progress.

We will, however, give the following figures, as they tend to show, in a slight degree, which were the favourable and unfavourable periods. The number of newspapers and books sent through the British post office rose from 202 millions in 1871 to 254 millions in 1873, that is about 26 millions annually; from 1873 to 1874, however, the number rose to only 258 millions, that is about 4 millions annually. The number of telegrams, which in 1870 amounted to 8·6 millions, increased in 1874 to 19 millions, showing a yearly increase of 2·6 millions; from 1874 to 1878 the number only increased to 22·5 millions, an annual increase of 0·8 millions.

We will now take another of the symptoms of economic progress, viz., the state of the money market. If we look at the value of paper currency as the substitute for cash payments, we find that it increased during the period 1869-73 about 1,679 million marks, and declined from that date till 1879, to the extent of 2,350 million marks. At this time there was a larger amount of uninvested capital lying idle than had ever before been known. The bank hoards accumulated, from the commencement of the period of stagnation, at least 1,100 or 1,200 millions of marks in gold and silver. If we take the returns of the two greatest financial institutions in the world, the clearing houses of London and of New York, we find that they show an increase from 190 milliard marks in 1870-71 to approximately 256 milliards in 1873-74; on the other hand, in 1878-79 they stood at 188 milliards, which, taken in conjunction with the increase of population, must be regarded as an unusual depression. How great was the revival in trade in 1880 may be gathered from the returns of both clearing houses. These showed that the year's total had increased from 203 milliard marks in 1878-79 to 266 milliards in 1880. The condition of foreign trade, though of course affected by the state of industrial enterprise, furnishes in itself an important symptom of the economic situation; by it one can compare the rise and fall in the purchasing power of nations. The wonderful fluctuations in national wealth are nowhere more clearly shown than in the statistical trade returns of the last decade. The figures, although

they cannot be said to be in any case strictly accurate, still point conclusively to progress or retrogression in material prosperity. In almost all countries the export returns are less reliable than the statistics of imports. It must be borne in mind also, that the volume of foreign trade is determined not by quantities but by value, and this is to a certain extent misleading, as changes must take place from time to time in the aggregate values of imports and exports; and one ought to consider how far these changes, which are due to fluctuations in average prices of commodities, affect the total import and export trade. We find then, from an examination of the trade returns of the most important countries of the earth, that the total import and export trade increased from 1865 to 1872 annually 2,166 million marks; from 1872 to 1873 about 1,620 million marks; while from 1873 to 1877 it experienced a sudden and rapid decline. The year 1878 witnessed the inauguration of a brighter era, trade improving to the extent of nearly 1,100 million marks; and this revival continued to make progress throughout the years 1879 and 1880. To avoid misconception, we cannot insist too much upon the influence exercised over these remarkable fluctuations by the rise and fall in prices; these, of course, being very material elements in determining the general totals of imports and exports; but even making due allowance for the effect of the changes in prices, these fluctuations are none the less remarkable, and must be accepted as unmistakable symptoms of the economic situation. From the trade volumes of the various countries, we find that the value of the foreign trade of the United States in 1880 exceeded by 308 million dollars that of the preceding year. Great Britain, for the same period, showed an increase of 79 millions sterling, France 482 million francs, and Austro-Hungary 55 million florins. These four countries then will serve as an illustration of the increasing growth of economic power, they alone having in one year raised the value of the world's foreign trade to the extent of about 3,300 million marks.

We will now proceed to an examination of those symptoms of economic progress which we have designated above as secondary symptoms, and will consider first the prices of commodities and wages. The favourable period, comprised between 1870 and 1873, was characterised by a general rise in the prices of commodities and in wages, by reason of the demand for industrial power far exceeding the supply. If we look at the trade circulars of London, Hamburg, and New York, which contain regularly the same staple commodities, we find that the highest prices as regards textile fabrics, iron, tin, copper, most articles of food, and colonial produce, were quoted in 1873 and 1874. The tables published by M. Bodio, the statements of Mr. Giffen in the Commercial History of the "Statist" (1881), the quotations of the New York commercial

papers and of the Hamburg lists, all point to the existence of this symptom in the economic situation. Laspeyres has conclusively shown that at hardly any period had the prices of commodities attained such a high rate as during the year 1871. The decline was first apparent in Hamburg in 1872; in New York and London, owing to the enormous supply on hand, it was experienced in 1874 or 1875. This decline, though gradual at first, began rapidly to assume larger proportions, and continuing until the middle or end of 1879, points to the existence of a distinct commercial depression. Laspeyres states, on the authority of Hamburg quotations, that the fall in prices of commodities in Germany from 1873 to 1877 had been greater than after an experience of forty years had been thought possible. As regards England, the "Economist," in its annual review, gives a very interesting statement showing the prices of staple commodities in 1870, as compared with 1845-50, the years for which the index number of 100 may be taken. From this it appears that, taking 22 categories whose whole index number is originally 2,200, the prices stood in 1870 at 2,689, and in 1873 had increased to 2,947, and declined in 1879 as low as 2,225. Mr. Giffen points out in an exhaustive review that, with but few exceptions, the English heavy goods in the period comprised between 1873-79 became from 26 to 66 per cent. cheaper. In 1878 lower prices ruled than had ever been quoted in London since 1850. M. A. de Foville, in a series of comparative statements, gives some interesting details of trade values; from these we gather that in 1877 the values of imports into France were 14·5 per cent., and of exports 27·1 per cent. lower than in 1862. The same decline was experienced everywhere, and it was a period of such universal commercial depression, that many industrial establishments had to forsake all branches of their business. Many important woollen firms in England and America failed, owing to the ruinous prices which prevailed. The decline in the prices of coal and iron caused a loss in these industries in Great Britain of from 60 to 70 per cent.

The enhancement of prices was first observable in the United States, and was noticeable in the case of pig iron, silk, and steel, at the end of 1878, and this upward tendency continued till the middle of 1879. For example, Pennsylvania pig iron rose in 1878 from 16·5 to 18·5 dollars, and in 1879 from 28 to 32·5; it continued to rise, until in 1880 it attained the average price of 38 dollars per ton, approximately the same rate as was quoted in 1873; in the same way the Glasgow warrants, which were quoted in 1879 at 40*s.* per ton, reached the high price of 73*s.* in the year 1880; and this favourable impulse was not wholly confined to England and America, but was visible throughout the commercial world. The twenty-two goods categories of the "Economist," which we men-

tioned above, ascended from their lowest index number in 1879, viz., 2,225, in one year to 2,577, an increase of about 16 per cent. Heavy goods, such as wool, cotton, yarn, twist, and manufactures, experienced during the course of 1880 a still greater enhancement of prices. According to the recently published statistics of Germany, the rise in prices in 1880, as compared with 1879, is of a more marked character than is apparent in the returns of the majority of the other European countries.

In connection with the variation in prices, we ought at the same time to study the influence they exercised over wages. These constitute an important symptom as regards industrial condition, and are instrumental in determining the degree of the material prosperity of various classes of the community. The old axiom of political economists, that wages only followed slowly in the wake of prices, has of late years suffered very considerable modifications. The effect of the sinking of prices upon wages during the period of depression comprised between 1874 and 1878 was clearly apparent, and the same marked influence exercised by the impulse given to commercial activity and the improvement of the industrial condition, was particularly noticeable in the augmentation of wages dating from the year 1879. It would be impossible in this review to enter into minute details of the fluctuations during the various periods of depression and commercial activity; but to show how high wages had risen before the crisis of 1873, we may mention that a special brand of champagne was ordered for the Belgian mining districts, and thousands of bottles consumed. In England the wages of coal miners rose from 4*s.* 9*d.* a day in 1871 to 7*s.* 3*d.* in 1873, and in Scotland to 8*s.* 6*d.*; whereas in October, 1878, these wages had been reduced to 2*s.* 9*d.* a day, a decrease to nearly one-third. Furnace men, who were receiving in 1869 only 3*s.* 9*d.* a day, in 1872 were paid 7*s.* 6*d.*, and in 1873 as much as 8*s.* 6*d.*; but in 1876 they had to be content with 4*s.* 6*d.*, and in 1878 with only 2*s.* 9*d.* a day. Puddlers were in 1868 in the receipt of 8*s.* per ton, in 1873 13*s.* 3*d.*, in 1874 11*s.* 6*d.*, and in 1878-79 between 7*s.* and 7*s.* 6*d.*; and during this latter period wages in the textile industries suffered a very considerable diminution; for instance, in one single year (1877-78) the spinners and weavers of north and north-east Lancashire suffered a reduction in wages to the extent of 10 per cent., and those of Oldham 15 per cent. It has been stated in the "Times" that the actual difference of British miners' wages between 1873 and 1878 amounted to as much as 26 millions sterling. The reduction of wages was not confined to England alone, but extended also to America. We find then that after a period of commercial prosperity and high wages, there ensued a time of such unparalleled depression (in 1876) in the mining districts of Pennsylvania that it

had the most disastrous results, one being a series of sanguinary riots, which necessitated for a time the establishment of martial law. The statistics of England, America, Belgium, and Germany, clearly show the increase in wages from the commencement of 1880. According to the most recent estimates of Mr. Fallows, it would appear that the Scotch miners in 1879 received on an average 6*d.* and in 1880 9*d.* a day more than they earned in 1878. And as regards the cotton industries, we gather from Ellison's well known reports, that out of the total value of British production in 1878, 50 millions sterling, in 1879, only 44 millions, but in 1880 54 millions were put by for wages and profit. From America we have abundant information respecting the increase of wages in agricultural, mining, and other industrial enterprises, and these clearly show the improvement which has already taken place in the industrial condition. We will now turn to the subject of the rates of discount, as also affording an indication of the economic progress.

During the period 1870-79 there were very many fluctuations in the rates of discount. The Bank of England, we find, previous to the commencement of the period on which we base our calculations, only changed its rate two or three times, or at the most, seven times yearly. In 1870 and 1871 it was altered ten times, in 1872 fourteen times, and in 1873 twenty-four times—in this year the bank rate was raised thirteen times. The rate of discount stood during a period of 57 days at 6 per cent., during 22 days at 7 per cent., and during 13 days at 8 and 9 per cent. The Bank of France in 1870 and 1874 changed its rate four times, and in the three years 1871, 1872, and 1873, the rates were established at 5 per cent. for 735 days, 6 per cent. during 349 days, and 7 per cent. during 12 days, and similar fluctuations were also experienced in Germany. In 1874 the commercial depression commenced to be universally felt, and from then until the middle of 1878 there were a greater number of changes in the rates of interest. The Bank of England altered its rate five times during one year, the Bank of France one only, and the rate was everywhere so reduced that it averaged, taking the chief financial centres—London, Paris, Amsterdam, Berlin, Vienna, Frankfort, and Brussels—only 4·01 per cent. in 1875, 3·52 per cent. in 1876, and 3·55 per cent. in 1877. In making up this average, the higher rates, which prevailed in Vienna, Frankfort, and Berlin ($4\frac{1}{2}$ to $5\frac{1}{2}$ per cent.), are taken into account, as well as the lower ones of London (2·47 per cent.), Amsterdam (3 per cent.), and Paris (2·31 per cent.), although these last determine with greater accuracy the industrial position, as they experienced the first fall, for in 1876 the bank rate in London stood at 2 per cent. for 255 days, in 1877 again for 170 days, and it was only towards the end of 1877 that there was a rise. In 1878

the Bank of England rate of discount was scarcely more than $3\frac{1}{2}$ and $4\frac{1}{2}$ per cent., but in the open markets short bills were discounted at $1\frac{5}{8}$ and $1\frac{1}{4}$ per cent. In Paris, the rate was at the most $1\frac{1}{2}$ and $1\frac{3}{4}$ per cent., and it stood at 2 per cent. only once in March, and from October to December at $2\frac{1}{2}$. The rates at Berlin, Amsterdam, and Brussels, exhibited great regularity in their fluctuations—between $2\frac{1}{2}$, $3\frac{1}{2}$, and $4\frac{1}{2}$ per cent. The unproductiveness of floating capital, and the absence of speculative spirit, cannot be said to afford such unfailing symptoms of material prosperity as these fluctuations in the bank rates. To pursue our investigations still further, we see that during the latter part of 1878, and also in 1879, a greater oscillation was to be found than in 1880; again, the increases in the rate were also more important in 1878 and 1879 than in 1880, and clearly indicated a stimulus which was wanting in 1880. There are to be seen the same unfavourable symptoms in the variations of the rates of interest as are visible in the rates of discount. The alterations in the Bank of England rate amounted in 1878 to 11, in 1879 to 6, and in 1880 to 2 only; but in 1880, taking six of the most important financial centres of Europe, these alterations only amounted to 17, of which, as we have already shown, 2 occurred in London, 3 in Paris, 5 in Berlin, 2 in Brussels, 3 in Amsterdam, and 2 in Vienna. The following table will show the average rates of interest for the years 1878, 1879, and 1880, in the six undermentioned markets:—

	1878.	1879.	1880.
Amsterdam	3·35	3·45	3·33
Berlin	4·36	3·76	4·41
Brussels	3·32	3·06	3·29
London	3·84	2·63	2·75
Paris	2·23	2·57	2·80
Vienna	4·50	4·19	4·00

These symptoms then tend to show that the lowering of the rates of discount is a distinct voucher for the excess of the supply of lending capital over the demand. Economists agree in regarding these symptoms as indications of the approach of a lasting period of cheap money. As regards investments, these are mainly dependent upon favourable or unfavourable economic conditions, as during a period of commercial prosperity there would naturally be a larger amount of available capital to invest than would be the case were depression prevailing. The amount of capital invested in the formation of new industrial establishments and various forms of investment would afford an insight into the condition of the industrial position. It appears from a statement in the "Moniteur " des Intérêts Materiels," in an article devoted to the consideration of

the subject of investments, that they averaged during the ten years ending 1879, 6,190 million marks. the amounts for the years 1871-73 being very considerably above the average, thus clearly indicating the existence of a period of excessive speculation. The following statement shows the amount invested each year, and the character of the investments:—

[000,000's omitted.]

Years.	In State Loans.	In Credit Institutions.	In Railways and other Industrial Enterprises.	Total.	Above or below the Decennial Averages.
	Marks.	Marks.	Marks.	Marks.	
1870	No returns	No returns	No returns	4,560,	−1,549
'71	9,360,	1,200,	2,000,	12,560,	+6,451
'72	4,380,	1,564,	4,166,	10,110,	+4,001
'73	3,470,	1,396,	3,856,	8,722,	+2,613
'74	1,268,	236,	1,864,	3,368,	−2,741
'75	372,	350,	666,	1,368,	−4,741
'76	2,356,	66,	498,	2,920,	−3,189
'77	4,618,	320,	1,384,	6,322,	+ 213
'78	2,896,	126,	622,	3,644,	−2,465
'79	4,406,	1,902,	1,212,	7,520,	+1,411

As showing the proportion of each class of investments, the following table may not be devoid of interest:—

Investment.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Public loans	74·5	43·5	40	38	27·50	80·75	73·25	79·25	58·75
Credit institutions	9·5	15·5	16	7	25·75	2·25	5·00	3·50	25·25
Railways, &c.	16·0	41·0	44	55	46·75	17·00	21·75	17·25	16·00

We will now proceed to deal with the question of English invested capital for the same period, and here again similar peculiarities which characterise the preceding table are to be found:—

[000,000's omitted.]

Years.	Nominal.	Actual.
	Marks.	Marks.
1870	692,	688,
'71	No returns	No returns
'72	1,630,	1,135,
'73	1,590,	1,165,
'74	1,635,	1,230,
'75	905,	822,
'76	845,	842,
'77	702,	621,
'78	803,	724,
'79	1,018,	763,

These figures may be taken as more strictly accurate than those affecting the total investments, as they only relate to a soli-

tary stock market, and they confirm the increase of invested capital up to the year 1874, the decrease from this period till 1877, and the recovery in 1878; and this statement is the more interesting, as we can estimate very nearly by the proportion, whether the investments were of a purely speculative or a real character. It appears from a publication recently issued, that in Great Britain, from 1st June, 1878-79, there were 922 companies registered, with a capital of 83 millions sterling; from 1879-80 there were 1,171, with an aggregate capital of 123 millions. In France, capital invested during the first six months of 1879 amounted to only 350 million francs, as compared with 1,748 million francs in the corresponding period of 1880. For the whole year ending 30th June, 1880, it amounted in round numbers to 4,000 million francs, and this is exclusive of the Belgian, Austrian, and Russian loans, which were not directly floated on the Parisian market. In Germany, during the first half of 1879, capital to the extent of only 142 million marks was invested, against 659 million marks in the corresponding period of the ensuing year, of which 25 million marks only were in railway and other companies and the remainder in foreign loans. In Austria it is estimated that the total amount of invested capital was only in 1880 170 million florins, compared with 271 million florins in 1879; but great stress is here laid upon the fact that after a lengthened period of inaction, in 1880 money was for the first time largely invested in railways and commercial enterprise, in preference to foreign loans; the amount represented by the former being 54 million florins. Then, as may be gathered from the preceding observations, statistics of invested capital afford an important symptom of the greater or lesser commercial activity. We can see, by reference to financial journals, the fluctuations which have appeared in the dividends paid by railways and other commercial enterprises; for instance, the influence of good and bad years exercised over those dividends is clearly shown in the comparative statements which they have from time to time published; for example, the depreciation of foreign stocks on the London exchange amounted in July, 1873, to 49·2 millions sterling, and in October, 1875, the loss was estimated by the Foreign Loan Committee of the Stock Exchange to amount to as much as 157·8 millions sterling. As regards the chief industrial establishments of England, it is admitted that the depreciation in the shares of the cotton spinning and weaving industries of Oldham from January, 1877 to 1879, represented a total loss of 1,360,000*l.* These figures convey only an approximate idea, and do not give the actual extent of the loss. In the United Kingdom in 1880 a decided improvement took place, which, when compared with the period of depression of 1879, is all the more clearly marked. The following

statement, giving the values of the different stocks and shares in 1879 as compared with 1880, presents some interesting features :—

[000,000's omitted.]

	Aggregate Market Value.			
	Lowest, 1879.	End of 1880.	Amount of Increase.	Rate per Cent.
	£	£	£	
Government stocks	1,270,	1,451,	181,	14·5
Home railways.....	203,	248,	45,	22·0
Railways abroad	76,	113,	37,	49·0
Banks	12,	16,	4,	37·7
Miscellaneous	14,	18,	4,	33·5
	1,575,	1,846,	271,	17·2

As Mr. Giffen points out in the Financial and Commercial History of 1880, published in the "Statist," the increase of selling value of the mass of securities in the United Kingdom, would probably amount to not less than 600 millions sterling. In the United States the loss in railway shares, from 1873 to 1877, amounted to nearly 1 milliard of dollars; but the improvement which took place since 1879 has to a great extent made up this loss, and in May, 1880 it was already reduced to 200 million dollars, and since that date things have continued to mend. It would seem that an improvement in the value of securities was to be found recently in other countries, for example, we will take the case of Austria; there it appeared that the value of the different descriptions of securities, which amounted in 1873 (May) to 1,589 million florins, fell to 830 in 1876, in 1877 it was only 879, and in 1878 906 millions; but then a steady improvement set in, until in 1880 the total increase in value of all securities amounted approximately to 300 million florins. Statistics of bankruptcies and failures may be taken also as unfailing symptoms of the industrial position. But our information as regards this subject is by no means complete, there being very little official data to work upon. The following table shows the number of failures which occurred in the United Kingdom in the period comprised between 1870 and 1880 :—

Years.	Number.	Years.	Number.
1870	8,151	1876	10,848
'71	8,164	'77	11,022
'72	8,112	'78	15,059
'73	9,064	'79	16,637
'74	9,250	'80	13,147
'75	9,194		

As regards the United States, the periods of commercial activity and of depression are clearly perceptible in the statistics of failures regularly published by Messrs. Dun, Newman, and Co. From these it will be seen how great was the decline of commercial prosperity from 1869 to 1878, and the revival which took place in 1880:—

	Number of Failures.	Amount of Liability.
	No.	Million dollars.
Yearly average, 1869-72	2,889	83
,, '73–78	7,866	200
Year, 1879	6,658	98
,, '80	4,735	65

The striking decrease both in the number of failures and extent of liability is particularly noticeable in 1880. We will now take France, and here the movement is not so strikingly accentuated, by reason of this country being less affected by the crisis of 1873, yet the fluctuations were considerable. Thus in 1872 the number of declared bankrupts amounted to 5,306, and the extent of their failures was represented by a total of 215 million francs; in 1873 there were 5,508, liabilities 218 million francs; in 1874 5,590, liabilities 241 millions; in 1875 5,361, liabilities 246 millions; in 1876 5,193, liabilities 298 millions, and it was not until 1877 that any sensible improvement was visible; in that year, though there were 5,480 failures, the amount of liabilities was only 260 million francs. In Austria, according to the published returns, the number of insolvents in 1875 was 1,670, in 1876 1,578, in 1877 1,324, in 1878 1,290, and in 1879 only 1,205 failures were declared. The amount of debts in 1876 was established at nearly 26 million florins, in 1877 at 13 millions, and in 1878 at about 14 millions. We will now look into the condition of the working classes, and we find that during the favourable period 1870-73 complaints of want of employment were almost unknown, the demand for labour, on the contrary, was great, and wages were high; but in 1874 there came a change, the hours of labour were reduced, and workmen were discharged in great numbers, and this was particularly exemplified in the years 1876-77, when the conditions of trade were most unfavourable; this was particularly noticeable in England and the majority of the continental countries. In America, in the beginning of 1877, it is estimated that the number of workmen totally unemployed amounted to half a million, and about an equal number worked only one or two days a week. At the end of 1877 the trades union committee gave the number of unemployed workmen as 2 millions. We have as yet so little positive information respecting the condition of labour in mining, textile, and other industries in 1880, that

we cannot speak with any certainty; but still, from the data of which we are already in possession, we think that it may be safe to predict that the condition of labour will be everywhere materially improved, and particularly so in America, where we may confidently assume that there will be an increased demand for skilled and other labour. Strikes afford a characteristic symptom of the state of the labour market, not only by their numbers, but also by their duration, and the manner in which they terminate, whether in favour of the employers or the employed. On this subject English, American, French, and Belgian statistics afford some interesting information. As regards Great Britain Mr. G. Phillips Bevan in a very interesting report has given a comparative statement as follows, showing the number of strikes which took place in each of the years 1870-79 :—

Years.	Number of Strikes.	Years.	Number of Strikes.
1870	30	1875	245
'71	98	'76	229
'72	343	'77	180
'73	365	'78	268
'74	286	'79	308

The great number of strikes that took place in 1872-73 have not been equalled either before or since, and these happened at a time when industry was at its highest. There was a very large demand for labour, and a great inflation in prices, and although men were getting good wages, yet they were not satisfied, and though the generality of them were earning more than they had ever earned before, they struck for a reduction of working hours: this was the reason of many of the strikes which occurred during this period. An explanation of the large number of strikes of 1879 is that the masters made an effort to win back the extra hour they were obliged to concede in 1872-73. The greatest number of strikes occurred in the building trade (598), the metal trades (390), mining industries (339), and in textile industries (440). In America, as well as in England, the years in which the activity in commercial enterprise was greatest, were characterised by the largest number of strikes—for example, in 1871-72. During this period there was a cessation of work in the anthracite coal mines of Pennsylvania, by which 90,000 workmen were put on half time. One of the most unfortunate strikes which ever occurred in America took place in 1876-77. This was a period of great distress, in which wages were reduced, hands were discharged, and it culminated in open revolt and bloodshed. Then followed the strike on the Ohio and Baltimore Railway, which was also of a very serious nature. In France, these symptoms of the economic

situation are also not wanting, but they appear in a less marked degree.

In conclusion with the subject of strikes and workmen's wages, we must not omit to give a passing glance at the effect which the peculiar conditions of the labour market have upon the immigration and emigration. In consequence of the increased facilities for emigration, this is a subject which had attained a vast importance, and may be classed as one of the relevant symptoms of the economic position. The great centre of attraction for those leaving the more densely populated of the European countries, appears to be the United States of America. As we have already pointed out, there have been very many changes in the conditions of commercial activity during the period comprised between 1870-79. The effect these changes have had upon immigration into the United States is to be seen in 1870-73, when there was a very great influx of immigrants; the powerful attractions, however, which induced such vast numbers to leave their homes and settle in America were wanting in 1874-78, consequently we see a considerable decrease in these numbers, and, in fact, immigration was not only wholly checked, but as many people left America for Canada and other countries as immigrated to it. In 1879, with the increased prosperity, there appeared an increase in immigration, and this attained its highest point in 1880, as the following statement will show :—

Years, ended 30th June.	Number of Immigrants.	Years.	Number of Immigrants.
1870–71	321,350	1875–76	169,986
'71–72	404,806	'76–77	141,857
'72–73	459,803	'77–78	138,469
'73–74	313,339	'78–79	177,826
'74–75	227,498	'79–80	457,257

And we find, from more recent information received from an unofficial source, that the figures for the year 1880-81 will show a more striking increase even than those which appear in the year 1879-80—for instance, the number from 1st July to 31st December, 1880, amounted to 284,443, and in one month alone, viz., May, 1881, they reached 117,482.

The following table will show the numbers of emigrants from Great Britain, German, and French ports, Sweden, Norway, and Denmark, and also the extent of immigration into Great Britain from 1870 to 1879 :—

Countries.		1870.	1871.	1872.	1873.	1874.
United Kingdom	Emigration	202,511	192,751	210,494	228,345	197,272
	Immigration	49,157	53,827	70,181	86,416	118,129
German ports	Emigration	59,100	75,912	125,650	103,638	45,112
French ,,	,,	—	—	49,679	48,054	60,356
Sweden	,,	20,003	17,450	15,915	13,580	7,791
Norway	,,	15,762	12,276	13,865	10,352	4,601
Denmark	,,	3,525	3,906	6,893	7,200	3,322

Countries.		1875.	1876.	1877.	1878.	1879.
United Kingdom	Emigration	140,675	109,469	95,195	112,902	164,274
	Immigration	94,228	93,557	81,848	77,951	53,973
German ports	Emigration	30,773	28,368	21,964	24,217	33,327
French ,,	,,	29,242	26,049	23,552	—	—
Sweden	,,	9,727	9,418	7,610	9,032	—
Norway	,,	4,048	4,355	3,229	4,818	—
Denmark	,,	2,088	1,581	1,877	2,972	3,118

And according to the latest returns, we find, taking first the case of England, that there shipped from Liverpool alone in 1880, 183,503 emigrants, that is 65,588 in excess of the previous year, of which 103,912 were British subjects. In the same year the German emigrants numbered 106,191, or an increase of about 72,864 over 1879. The United States' quarterly statements give the number of immigrants for the calendar year 1880, as 593,703, compared with 250,565 in the previous calendar year. In New York alone the Board of Trade Commissioners registered in 1880, 327,371 emigrants, as against 140,760 in 1879. According to the last census, there were 50,152,866 persons in the United States, of whom 43,475,506 were born in America, and 6,677,360 were aliens, so that the proportion of emigration to total population in 1880 was at the rate of 15·3 per cent., compared with 16·8 per cent. in 1870. It will be seen then, from the foregoing statement, that there was a considerable falling off generally in the numbers of emigrants from 1874 to 1878, and a noticeable increase in that year; and judging from the emigration returns of Great Britain and Germany, in connection with the immigration returns of the United States for 1880, there would appear to have been in that year a very large amount of European emigration.

Another and a very interesting symptom of the conditions of material prosperity lies in the movement of the population—the variations in the number of births, deaths, and especially of marriages, are certain indications of the favourable or unfavourable conditions in the years in which they occur. Marriages, in particular, would appear to us to be an important element in determining the economic conditions, and it will be readily conceded that

an increase or decrease in the number of these, point conclusively to the existence of material ease or the reverse. In dealing with this question, we will take, as usual, the period 1870-79, and we find that the years 1870-73 were characterised by a very marked increase in the number of marriages (thereby pointing to the existence of favourable conditions and confidence in a time of continued prosperity). This increase was particularly noticeable in Great Britain, Germany, France, Belgium, Austro-Hungary, and Holland, but 1873 witnessed the commencement of a steady diminution in these numbers.

Number of Marriages from 1870-79.

Years.	England and Wales.		Germany.		France.	
	Total Number.	Proportion per 1,000 Inhabitants.	Total Number.	Proportion per 1,000 Inhabitants.	Total Number.	Proportion per 1,000 Inhabitants.
1870 ...	181,655	8·0	—	—	223,705	6·0
'71....	190,112	8·3	—	—	262,476	7·2
'72 ...	201,267	8·7	423,900	10·3	352,754	9·8
'73....	205,615	8·8	416,049	10·0	321,238	8·9
'74....	202,010	8·5	400,282	9·5	303,113	8·3
'75....	201,212	8·4	386,746	9·1	300,427	8·2
'76....	201,874	8·3	366,912	8·5	291,366	7·9
'77....	194,352	7·9	347,810	8·0	279,094	7·5
'78....	190,054	7·6	340,016	7·7	279,650	7·5
'79 ..	181,719	7·2	335,113	7·5	282,776	7·6

Years.	Belgium.		Netherlands.		Austria.		Italy.	
	Total Number.	Proportion per 1,000 Inhabitants	Total Number.	Proportion per 1,000 Inhabitants	Total Number.	Proportion per 1,000 Inhabitants	Total Number.	Proportion per 1,000 Inhabitants
1870....	35,263	6·9	28,632	8·0	199,083	9·8	188,986	7·3
'71....	37,538	7·3	28,991	8·0	194,591	9·5	192,839	7·4
'72....	40,084	7·7	30,189	8·3	192,406	9·3	202,361	7·5
'73....	40,598	7·7	31,671	8·6	194,815	9·3	214,906	8·0
'74....	40,328	7·6	31,353	8·4	189,017	8·9	207,997	7·7
'75....	39,050	7·2	31,553	8·3	180,349	8·4	230,486	8·4
'76....	38,228	7·2	31,699	8·2	176,148	8·1	225,453	8·1
'77....	36,964	6·8	31,470	8·1	161,337	7·4	214,972	7·7
'78....	36,669	6·7	30,710	7·7	164,233	7·4	199,885	7·0
'79....	37,421	6·8	30,655	7·6	169,088	7·6	213,096	7·5

Looking at the data of which we are already in possession relating to twelve of the principal European countries, it is obvious that there is a very marked difference between the annual average number of marriages contracted during the period 1870-73 and those of the year 1877-78, for as regards the former period, we find that, taking the most favourable year, there were contracted 1,785,200 marriages against 1,465,000 in 1877-78; the decrease,

therefore, in the year of depression (1877-78) amounted to as much as 320,000. The favourable or unfavourable conditions of life are not so strikingly manifested in the movement of the population as regards births and deaths as in the case of marriages; in the former we may notice, however, a considerable diminution; in the year 1876 in the majority of the European countries the death-rate was highest in those years which were not so much characterised as years of depression, but in which the birth-rate was lowest; and as regards the entire growth of the population, the crisis did not seriously affect it at the time. The after effects, however, were undoubtedly felt in 1879-80. The crisis of 1873, however, had an unmistakable influence on the number of suicides. M. Jochnick states that in twenty-two European countries the number of suicides increased from 99 to every million inhabitants during the quinquennial period 1871-75 to 119 per million in the period 1876-80. M. A. von Oettinger, taking a group of twenty countries, gives the following statement:—

Years.	Number of Suicides.	Proportion per Million Inhabitants.
1875	20,208	80
'76	21,638	85
'77	23,654	92
'78	24,910	97

The fact, however, must not be lost sight of, that statistics relating to suicides must necessarily be incomplete, as on this subject it is almost impossible to obtain reliable data, in very many cases a great number being omitted, and attempts at suicide entirely so. Statistics of mendicity and crime afford also an interesting study in connection with the question of economic progress or retrogression, as M. Quetelet points out, good and bad times make their influence felt in a very perceptible manner in the sphere of social life.

It is then by all the symptoms which we have enumerated that we have endeavoured to estimate the world's prosperity, and these have unquestionably proved that in the last decade economic conditions have been exposed to greater and more varying fortunes than they ever before experienced. At the commencement of the period there were unmistakable signs of an increase in wealth almost without parallel in commercial annals; afterwards, for a number of years, there was apparent a sensible decline in wealth and a reduction of profit to an enormous extent; and again, dating from the middle of 1879, there were signs of renewed commercial activity, a fresh impetus was given to trade, investments were

found for capital hitherto unemployed, workmen were in greater demand, wages were good, a very marked improvement was to be seen not only in the European but also on the American exchanges, and in fact there was a general revival in all branches of trade and industry. This then shows that the view we took of the future of the economic position has unquestionably been borne out by facts, and must be a convincing proof to those pessimists who took such a desponding view of the situation, that their fears as to the ultimate improvement in material prosperity were altogether groundless. Who is there who still believes in the hypothesis that the depression of 1874-78 marked the termination of commercial and industrial prosperity? Who now believes that the crisis of 1873 marked a new era, and that the highest point which improvements in trade and industry could reach had been attained? Who will now share the pessimist view, that in the future a great decrease of prosperity is to be looked for before the increase may be expected? This increase has already appeared, and in the manner in which in the year of great commercial depression, viz., 1878, we predicted it would come. And we look with unbounded confidence to a still greater increase of prosperity. Who can predict what wonderful inventions may yet be in store for us—what improvements electricity, for instance, may effect in the future? Who can gainsay the improvements which are continually being brought to bear upon machinery? In looking at the wonderful strides with which cultivation and improvement have been advancing, one cannot fail to be impressed with a sense of their vastness and their very great importance. Let us take, for instance, the scheme for the construction of the Panama Canal. This in itself is an evident sign of the rapid advance made in recent years, and this is an undertaking alone which will require many years and nearly a milliard of francs to complete. The colonisation of Central Africa, the explorations in the southern and eastern portions of the continent, the transformation of a part of the Sahara into an inland sea, and many other remarkable projects, all point to the inauguration of a new and even brighter era in economic life; and these facts, taken in conjunction with the very marked improvement in the productive powers of labour, must be accepted as signs of the approach of a period of continued increase in material prosperity; and although we are of opinion that the characteristics of the ensuing economic period will differ very materially from those which marked the preceding one, yet after a patient study of facts and observations in connection with this important subject, we can arrive at no other conclusion than that a period of lasting material prosperity and social wellbeing may be confidently anticipated.

MISCELLANEA.

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I.—*The Death of Mr. William Newmarch, F.R.S.*

We extract from the *Statist* and the *Economist* the following notices respecting the death of Mr. Newmarch, which took place on Thursday, the 23rd March, at Torquay. These notices are so full that it is quite unnecessary to add anything in this place, especially as this would be to anticipate the action of the Council and of the Society in regard to the event. We may only echo specially the remarks made as to the valuable services which Mr. Newmarch rendered to the *Journal* during the period of his editorship. His contributions were not only valuable and frequent, but he also planned many of the tables which have become permanent, and which it is hoped will become the more valuable the longer they are continued.

From the *Statist* of 25th March, 1882:—

"It is with a deep feeling of regret, which will be universally shared by economists and statisticians, not only in this country but on the continent and in the United States, that we record the death of Mr. Newmarch, which occurred at Torquay on Thursday morning. We subjoin a brief obituary notice which appeared in the *Times*, describing the principal facts in Mr. Newmarch's life, and the nature of his chief contributions to the study of political economy and statistics, in all of which we most fully concur. Mr. Newmarch's position and influence were in every way remarkable. He was a self-made man, and, while comparatively young, attained the high position in business which he held first as actuary of the Liverpool and London and Globe Insurance Company, and then as manager of Glyn's bank. His indomitable energy and vigour were conspicuously shown in the business part of his career. At the same time, while still comparatively young, he was chosen by Mr. Tooke to co-operate with him in the production of the two concluding volumes of the *History of Prices*, embracing the period from 1840 to 1856, the co-operation, in fact, amounting very nearly to the writing of the

two volumes by Mr. Newmarch alone, and Mr. Tooke suggesting and supervising merely. Those who are acquainted with the work are well aware that in these last two volumes there is, in fact, a new departure, the statistical exposition being more elaborate than it was in Mr. Tooke's hands, while the theory and principles of business development are set forth with more vigour and definiteness of style. To say this much of the last two volumes of the *History of Prices* is to detract in no way from Mr. Tooke's singular merits as an original thinker and master in the art of statistical investigation. We are merely pointing out the distinct difference of style and treatment, in order to bring out that Mr. Newmarch was more a *continuateur* than a *collaborateur*, and that the pupil was in all respects worthy of the master, bringing to the task new ideas and methods, and an intimate acquaintance with a new and expanding world of business. For many years after the publication of this work, Mr. Newmarch was too deeply occupied in business to execute any large work, while he had a professional objection as a banker to contribute to magazines or newspapers over his own signature; but to the *Times*, *Pall Mall Gazette*, *Fortnightly Review*, and other journals, including the *Statist*, since its establishment four years ago, he was an occasional and valued contributor. His articles on banking and currency, as well as on the trades union and free trade questions, were all of singular force, and his labours as a writer thus contributed greatly to the public enlightenment, though the bulk of the public little knew to whom they were indebted. Mr. Newmarch's services in connection with the Statistical Society were, however, public and avowed, and his papers remain as a worthy memorial of him, though it is strange to record of one who has died while in little more than middle life, that the time of his secretaryship has already become an "antiquity"—so quick are the changes of life. His labours were incessant, and he spared himself in no way in any statistical task, the bulk of his elaborate tables being executed with his own hand, and without that aid from subordinates which outsiders are so apt to think indispensable, but which in any first-class work can hardly be given by subordinates at all.

"It is difficult to estimate the extent of Mr. Newmarch's contribution to the stock of ideas in economy and statistics. Apart from making such contributions, he was a clear expositor of the traditionary principles of the orthodox school of English economists, his inheritance of Ricardo and Tooke being direct and immediate. In this capacity his one failing was, perhaps, an excessive scorn for some of the recent innovators, or attempted innovators, on the orthodox doctrine, who had not, he thought, the firmness of mental fibre necessary for following out the data of economic science to their logical conclusions. As an authority on the Bank Act of 1844 and connected controversies, he was always most earnestly opposed to the division of the Bank of England account into two parts, one of the leading principles of the Act, as being both unnecessary and misleading. In this opposition, however, he did little more than continue with his own warmth and energy of nature the opposition of Tooke, whose demonstration against the Act on this head will

probably now be accepted by economists without question, the great growth of business and of the system of cheques since the Act having proved of itself that the importance attached to the note currency by the school which Peel followed was exaggerated. *Solutum est ambulando.* What we should say was Mr. Newmarch's distinguishing characteristic was the power of applying economic principles to the real world of business as it now exists in the United Kingdom, and illustrating these principles by statistics. There are economists and there are statisticians, but Mr. Newmarch combined the two qualifications, the result being a species of writing about the laws of business and their working on a large scale, of which Mr. Tooke was almost the first to give an example, and which is yet comparatively new and rare. That it will be developed, and result in the end in building up a new branch of economic science, we believe to be beyond question. As a pioneer in this study, Mr. Newmarch will hold a conspicuous place.

"As the subjoined notice states, it was Mr. Newmarch's intention to continue the *History of Prices*. With praiseworthy devotion to science and literature, he retired last year from active business, with the express purpose of devoting himself to this work, while he was yet possessed of full physical and intellectual strength. 'Relentless death' has stept in to prevent the fulfilment of so noble a task, for which few are so qualified, though the ideas and method remain as an example and a lesson for the rising generation of economists.

"The following is the notice above referred to:—

"'We regret to record the death, at the age of sixty-two, of Mr. William Newmarch, F.R.S., for many years manager in Glyn's Bank, and previously actuary of the Liverpool and London and Globe Insurance Company. Mr. Newmarch's decease took place at Torquay yesterday morning. About a year ago he was on the eve of retirement from active business, and everything connected with that event had been duly arranged for, when he was seized with a paralytic stroke, and though he recovered sufficiently in the course of a few months to resume correspondence with his friends, and take an interest in current affairs, the recovery has unhappily proved to be temporary only. Mr. Newmarch commenced his career as a clerk in the house of Messrs. Leatham, Tew, and Co., of Wakefield. He subsequently joined the staff of the Agra Bank, and later, in 1852, became the actuary of the Globe Insurance Company. It was by his advice and to a large extent through his management that that establishment became amalgamated with the Liverpool and London Insurance Company. In 1856, Mr. Newmarch was examined before the Select Committee on the Bank Act. In 1862 he became the manager in Glyn's Bank, in which post he continued for about nineteen years. Besides being well-known in business circles, Mr. Newmarch occupied a distinguished position as an economist and statistician. His writings and conversation were marked by a clearness, directness, and vigour which would probably have secured him a great career in political life, if he had devoted himself to politics, for which his knowledge of the subject matter of political economy and statistics, as well as of business, well qualified him. As it is, his writings, though usually anonymous, have had no small effect in diffusing sound ideas on questions of currency, banking, free trade, and the general laws of industrial and commercial progress. His most prominent work was the preparation of the two concluding volumes of Tooke and Newmarch's *History of Prices*, published in 1856, a work which has been out of print for some time, but is, nevertheless, well known to economists and statisticians as a complete and masterly exposition of the economic questions which occupied

attention during the second quarter of the century, embracing many of the problems arising out of the Australian gold discoveries, the construction of the great railway systems of Europe, and the first introduction of free trade. It was his intention during the remaining period of his life to continue and complete this work, a task for which he had made considerable preparations, though it is, we believe, doubtful, according to the account he gave his friends, whether anything has been actually executed in a form admitting of publication. Mr. Newmarch was for many years the honorary treasurer and a most active member of the Political Economy Club. He was also for many years the acting honorary secretary of the Statistical Society, and at the conclusion of his services in that capacity became president for the usual term of two years. His contributions to the Journal of the Society were frequent, and his latest paper, read in 1878, on the growth of the foreign trade of the United Kingdom, in which he made use of summary tables planned by him for that Journal many years ago, attracted a good deal of attention. He was also a corresponding member of the Institute of France. It will add to the regret generally felt that Mr. Newmarch was barely on the threshold of old age at the time of his death. When he was struck down a year ago he was in full vigour, and had the prospect of many years of literary and scientific usefulness before him in the retirement he had so well earned.'"

From the *Economist* of 25th March, 1882:—

"We regret to have to record the death, at Torquay, on the 23rd inst., of Mr. Newmarch. Born at Thirsk, Yorkshire, on the 28th January, 1820, he had but few of the advantages that a middle-class education now affords, and was mainly indebted for his general training to habits of self-culture, and to his association when very young with men in the active pursuits of business life. Amongst his earliest employments were clerkships, first under a distributor of stamps in his native county, next with the late Mr. Newman, sen., of the Yorkshire Fire and Life Office, at York, a man of considerable scientific attainments, and afterwards in the banking house of Messrs. Leathams. Marrying young, and anxious for a wider scope for the exercise of a talent for the study and discussion of economical subjects, Mr. Newmarch removed to London, and obtained employment on the staff of the *Morning Chronicle*, as well as a position of some importance in the management of the Agra Bank. His knowledge of the principles of banking and of business generally soon also gained him the steady and influential support of the most distinguished city men, and especially of Mr. William Tooke, Alderman Thompson, M.P., and the late Lord Wolverton. Under the advice of these friends, Mr. Newmarch, in 1851, quitted his position at the Agra Bank for the Secretaryship of the Globe Insurance Company. Mr. Tooke was desirous of continuing his book on the 'History of Prices and of the State of the Circulation from 1792,' and upon Mr. Newmarch offering to co-operate with him in writing two volumes as a continuation, Mr. Tooke gladly accepted the offer, just as he had done in the case of Mr. Danson's offer of similar assistance in the preparation of the fourth volume, published in 1848. The fifth and sixth volumes took some years of careful study. A vast body of statistics had to be methodised on novel and original principles of treatment. At length, in 1857, the public obtained the advantage of these researches, which met with general acceptance and approval. The work became a classic in

its particular department, and won the adhesion to the principles of extended lines of inquiry, not only of English, but of its foreign economists. In Germany, especially, it soon obtained the honours of translation and of use in several universities. It very justly established Mr. Newmarch's reputation. The Royal Society, a body which in these times seldom welcomes a 'city man' amongst its members, elected him a fellow. Mr. Newmarch, however, never rested idle for a moment when success had thus crowned his labours. He retained the same ardour and diligence in the study of ever accumulating stores of new facts and fresh experience. He rendered great service to the community by the admirably sound evidence he gave as a witness before various parliamentary committees on currency matters, income tax, &c. Long associated with the Statistical Society of London, as one of its honorary secretaries, he took the utmost possible interest in its meetings, and long discharged the duties of editor of its *Journal*. In 1869-71 he was elected to the presidentship of the Society, in succession to Mr. Gladstone. He was also for many years secretary, and one of the most active members, of the Political Economy Club; and those of us who have heard him speak at any of its meetings, or at those of the Adam Smith Club, now dissolved, but of which Mr. Newmarch was the founder, will ever recollect with pleasure the sound sense, the vigour, and the incisiveness of his discourse.

"In 1862, Mr. Newmarch quitted the service of the Globe Insurance Company, and accepted a prominent position in the banking house of Messrs. Glyn, Mills, and Co., where he remained until last year, when his constitution, never very robust, gave way under a stroke of paralysis. Since then he had rallied to some extent, so that his family had hopes of his recovery, and he was able still to retain a directorship of the Grand Trunk Railway Company of Canada and a trusteeship of the Globe Million Fund. It was his intention to devote some of the leisure of retirement to bringing his *History of Prices* down to the present date. It is a public loss that he should not have survived to accomplish this favourite object of his studies; but for so much, and such good, work as he completed, his name will ever be entitled to respect, and to a high place in the list of the most able economical writers of the present day.

"Mr. Newmarch had, for more than thirty years, contributed some of his best work to the public press; in the earlier part of his career to the *Morning Chronicle*, and afterwards to our own columns. In 1853 the *Morning Chronicle* published a series of his papers on the new supplies of gold, which attracted much notice. Reprinted in London, in 1853, in a volume of 122 pages, the papers attained a further publicity, and were enriched by some additional chapters containing an analysis of the Bank of England circulation, to which the then governor, Mr. J. S. Hubbard, contributed some materials, including valuable notes upon the gold coinage, and on the quantity of English gold coin derived from the melting of American coin. Mr. Newmarch also took the opportunity of continuing in this pamphlet the figures for the five years 1848-52, in continuation of the paper submitted to the Statistical Society in 1851, on the

circulation of bills of exchange in Great Britain from 1828 to 1847, and the researches that paper contained still form a model and starting-point for more modern inquirers on the same subject.

"In 1855, Mr. Newmarch published an interesting essay 'On the Loans raised by Mr. Pitt during the first French War, 1793-1801, with some Statements in Defence of the Methods of Funding Employed.' The arguments in this essay were supported by very elaborate calculations respecting each of the loans, in which Mr. Newmarch had the co-operation of Mr. Frederick Hendriks, at that time actuary of the Globe Insurance Company, of which, as we have already mentioned, Mr. Newmarch was secretary. The general conclusions of the essay were that Pitt, in his plans of borrowing, did the best that could possibly have been done for England under the circumstances of the times. This argument was controverted in a published series of lectures to the University of Oxford by Professor Rickards. They were, however, warmly defended by the late Earl Stanhope in his biography of Pitt.

"In 1857 and 1859, Mr. Newmarch read two elaborate papers to the Statistical Society, on the 'Electoral Statistics of the Counties and Boroughs in England and Wales during the twenty-five Years that had passed from the Reform Act of 1832.' One of the points strongly brought out was that any plan which proposed to redistribute the franchise, or the number of Members, upon the single principle of density of population, would completely break up the existing county and municipal areas. In 1859, appeared an anonymous pamphlet, entitled *Political Perils in* 1859. It was written by Mr. Newmarch, and contains a vigorous defence of Lord Derby's Government on the question of political reform. On all other subjects, financial, commercial, and fiscal, it need scarcely be added, Mr. Newmarch was a Liberal. Indeed, he was for many years a leading member of the Reform Club.

"In 1861, Mr. Newmarch presided over the Section of Economic Science and Statistics at the meeting of the British Association at Manchester. His address was much admired as a model of its kind. Its object was to show that, full as the thirty years then past had been of scientific achievements, those of Economic Science and Statistical Inquiry had a place in the first rank, and had arrived at a kind of intermediate point, at which, after long debate, many of the earlier controversies are finally settled, and from which the way can be seen to a higher level, the least doubtful result of our experience being the discovery that the most solid progress is made by guiding ourselves in the main by close observation of facts, and by employing speculative and hypothetical reasoning under the most cautious conditions, and always with distrust and reserve. The contention thus conveyed was very characteristic of the course of thought which had conduced to render Mr. Newmarch—to use the epithets of the *Times*—'An able man of business, a profound economist, and an admirable exponent of the art of statistical investigation.'

"It only remains for us, in completion of our remarks, to refer to the very important contributions Mr. Newmarch had for a long series of years been in the habit of making to our columns. It was

he who commenced, in 1863, our annual 'Commercial History of the Year;' and in addition to this annual contribution of facts and figures, and digest of the data, on which a superstructure of reasoning upon them was so skilfully based by Mr. Newmarch, he contributed for a long series of years many special articles to our columns. We are amongst those who long ago were in some degree associated with him in the foundation of the Tooke Professorship of Economic Science and Statistics at King's College. And this suggests to us the idea that if Mr. Newmarch's surviving friends think fit to promote some public memorial of him, no better form of it could be devised than that of a Newmarch Professorship of Economic Science and Statistics at one of our English colleges or universities."

II.—*Financial and Commercial History of* 1881.

The following introduction is taken from the Supplement to the *Statist* of the 28th January, 1882, in continuation of similar extracts for previous years:—

"Our introduction a year ago commenced with a note on the remark that 'a nation is happy whose annals are dull.' This was true, we said, in economics and business, whatever it might be in other matters. The year 1880 had been dull, and one reason of the dulness was that it was a year of quiet and steady activity in trade, and that no events which might be very interesting to describe had occurred to disturb the quiet. This remark cannot apply to the year which has now passed. As compared with 1880, it has been a comparatively exciting year. The movements in prices, and the changes in various departments of business and finance have been, in some conspicuous instances, on a great scale, and the whole world of business is evidently more excited and disturbed than it was a twelvemonth ago. To mention only a few of the more conspicuous events which have happened, we find that early in the year attention was very largely occupied with the disturbed state of the New York money market, owing to the operations of the American Government and legislature. The market had no doubt been prepared for disturbance by two or three years of great activity in speculation; but perhaps the actual disturbance would have been delayed if the American legislature had not intervened. What was proposed, however, was that a large part of the American debt should be refunded at 3 per cent., the Bill containing clauses which would have prevented the banks actually holding American Government securities at the time of passing the Bill from disposing of them. The result was that the banks holding American securities against their note circulation, fearing that loss would be imposed upon them by these securities only bearing interest at 3 per cent., hastened to take the necessary steps for reducing their circulation, and deposited their securities for that purpose. The contraction of currency thus occasioned caused a considerable rise

in the value of money, and a withdrawal of gold from this side to New York, no part of which as yet has come back. Since that time, also, the New York money market has remained in a comparatively sensitive condition, although the original cause of disturbance was removed by the Refunding Act not being proceeded with. The proceedings in the spring, in fact, only brought to light the extreme sensitiveness of the American money market, which had been developing during the previous three years; and this sensitiveness must now be considered part of the general economic situation. The next event we notice in this connection was the rise of money in London and in all the continental money markets in the autumn. Up to the beginning of August this advance seems hardly to have been discounted anywhere, and at one time, at the end of July and just at the beginning of August, the current rates in the discount market for three months' bank bills ranged from $1\frac{1}{4}$ to $1\frac{1}{2}$ per cent., as compared with a bank rate of $2\frac{1}{2}$ per cent. By the third week of August, however, the bank rate was raised to 3 per cent., the open market following closely; and in the following week the bank rate was raised to 4 per cent., the open market also following closely. Shortly after that, and almost all through September, the open market tended to be easy again, so that a rate of $3\frac{1}{8}$ per cent. was touched in the week ending 21st September; but, early in October, another change occurred, and the bank rate was raised to 5 per cent., at which point it has stood ever since, the open market sometimes falling as low as 4 per cent., and at one time as low as $3\frac{5}{8}$ per cent., but at other times being close up to the bank. This sudden and great rise in the value of money naturally marks a great change in the general economic conditions from what they have been. Before the end of the year, also, attention began to be attracted to the preliminary symptoms of a coming collapse in the Bourse speculation in Paris. Some remarkable cornering movements, which are very often significant of speculation for the rise culminating, and the battle between 'bulls' and 'bears' becoming very keen, occurred in the later part of the year. A great corner in the shares of a company called the Union Générale, which has been more than once referred to during the past year in our columns, was the most remarkable of these incidents. In their anticipations of a fall, leading speculators are apt a little to anticipate the time at which a collapse must occur, and in doing so they lay themselves open to the cornering operations of their opponents, who gain sometimes an easy victory, but only prepare by their victory a still greater collapse than would otherwise have happened. In some cases, also, there was actually a premonitory fall before the end of the year, some troubles in Egypt especially causing a fall in Egyptian stocks in October and November, while Turkish and other stocks which had been largely speculated in were also sold on the conclusion of the Turkish negotiations, that event being considered in many quarters a culminating event in the rise in securities which has been going on so long. All these events have been quite sufficient to mark out the past year as one of a very different character, financially, from its predecessor.

"Nor have these been the only events of the past year of con-

siderable interest. Apart from political questions, there have been many events of economic interest. Amongst these we have to notice especially the fact of the last year's harvest in the United States being much less satisfactory than those of the previous two or three years, there being a great deficiency both in the wheat and Indian-corn harvests. The harvests in Europe generally have apparently been of a moderately satisfactory character, and the failure of the United States harvest was followed by only a temporary rise in the prices of cereals. The United States harvest, however, is now so important internationally, that the failure must have considerable future effects, especially if it should be followed by another harvest below the average during the present year. Besides this, we have had such events during the past year as a great number of new issues—new shares, in fact, coming forth in a great rush in the spring and summer months; a great activity in parliamentary notices for new railways and other undertakings, greater, it is said, than the activity manifested in any year since 1845; the issue during the summer of an Italian loan for 32 million pounds, in order to abolish the forced currency in Italy; a great 'corner' in cotton at Liverpool in the autumn; a great fall in the securities of the Grand Trunk Railway of Canada, as well as in American securities; and generally a great movement in the stock markets, the tendency being upwards in the spring and summer months, and subsequently downwards, as if the rise in the early spring had marked the culminating point of the great rise in securities which began in the autumn of 1879. Instead of being a year of quiet activity, it has been a year of activity, undoubtedly, but also of great speculative excitement, in which many signs have been exhibited of the existence of conditions which must, sooner or later, cause a turn in the opposite direction.

"*General Prosperity of* 1881.

"Notwithstanding the excitement which has prevailed, however, there can be no doubt that the year 1881 has itself been highly prosperous, and even more prosperous than the year 1880. We had to notice, a year ago, the very large increase of railway traffic, as compared with the previous year; but the large increase has been followed by another increase in 1881, of a very moderate amount in itself, but still remarkable as following the great increase of the previous year. The improvement is also the more remarkable, because the first quarter of the year was extremely unfortunate for business, owing to singularly bad weather and the great interruption of traffic through snowstorms which occurred. This interruption not only stopped the traffic at the moment, but was the cause of a more general pause in business, which lasted almost until April. We find, however, that at the end of the year the increase of railway traffic amounts to between 2 and 3 per cent. over the increase of from 5 to $7\frac{1}{2}$ per cent. in the previous year. Similarly the exports of British and Irish produce, which increased in 1880, as compared with 1879, over 16 per cent., have this year again exhibited an increase of about 4 per cent.; and although there is no increase in the imports, but a slight diminution, this is

to some extent satisfactory as resulting from a diminution in the imports of articles of food. In the entries of shipping there is also a decrease, or not a great increase, for the year, in the foreign trade; but in the clearances there is a renewed increase, which corresponds to the fact of great activity in the shipbuilding industry, which we shall have to notice presently. The bankers' clearing-house returns have also uniformly exhibited an increase all through the year, and this increase has taken place not only on Stock Exchange settling days, but also on the 4ths of the month, which are considered more characteristic of business as distinguished from finance. The iron trade, as was the case last year, has shown the greatest improvement. The large production in the United Kingdom in 1880, which turned out in the end to be even greater than we expected a year ago, when we were writing, being 7,700,000 tons, whereas our calculation was 7,200,000 tons, has been exceeded in 1881, the record now being of a production of 8,100,000 tons. This is an increase of over 5 per cent. above the actual production of 1880; while the real figure may possibly turn out to have been even larger than this. The most ample particulars, as was the case a year ago, are given of this progress of the iron trade in our Supplement; but the fact of a great production is the most striking, and is beyond all question. This increase of production has also been absorbed for the most part in the home consumption, the total exports having been much the same as they were a year ago, and the whole of the increased production having either been absorbed at home or having gone into stock. No doubt the increase of stocks has been considerable; still the consumption of 1881 has been larger than it was in the previous year, and at the latest date the records of this consumption going on continue of the most favourable character. In the cotton and other textile trades there has also been some improvement as compared with the previous year, the advance of that year having been more than maintained; but the figures in these cases hardly show that there has been any great additional improvement. The agricultural return of the past year, however, has been better than it was a year ago, and much better, of course, than the very bad year 1879, which was so disastrous to the agricultural interests, and although not quite good enough to replace the farming interest in a prosperous condition, or to prevent the necessity of considerable remissions of rent, it is still something to the good in the general account of the national production and consumption. The miscellaneous trades of the country have also in all directions been active; so that all the conditions of profitableness in business have been present. There has been large production and large consumption at low prices, and there has undoubtedly also been a very considerable saving. If 1880 was prosperous, 1881 has undoubtedly been much more prosperous, although there has been less advance in 1881 over its predecessor than there was in 1880 over 1879. In 1880, in fact, trade was still feeling the benefit of the great reaction upwards which had commenced in 1879.

"*The Iron and Shipbuilding Trades.*

"While the general prosperity has thus been what we have

described, the special prosperity of the iron trade has been so remarkable, that it may be useful to repeat here a few of the more striking figures. We have already referred to the large increase of production, and also to the fact that the exports were no greater in 1881 than in the previous year, so that the increased production was either absorbed by increased home consumption or by an addition to stocks. It is interesting to find, however, that while exports of all kinds to all places were about the same last year as in 1880, this result was obtained in spite of a very considerable decrease in the exports to the United States. These exports amounted in 1880 to 1,358,000 tons, but last year to 1,162,000 tons only, so that the difference of about 200,000 tons must have been exported to other countries than the United States; in other words, the prosperity of the iron trade last year, as far as foreign countries were concerned, was due, not so much merely to a special demand from the United States, as to the generally more favourable conditions abroad. Altogether, in fact, the consumption of iron, looking to the fact of the home consumption having also increased, was of a more satisfactory character last year than in 1880. This is the more reassuring, because it would also appear that one of the causes of the diminished demand for the United States has been a large increase of production in that country, the amount produced in 1880 having been 4,295,000 tons, but last year being estimated at 4,700,000. It would appear then that if the iron trade in the United States is making progress, there is sufficient demand for the English production of iron both at home and elsewhere to make up for any falling off in the demand for the United States. If, as seems now to be expected, the demand for the United States should revive during the current year, there is a prospect of very great prosperity indeed for the iron trades. The finished iron trade, however, it will be observed from the circulars in the Appendix, has been even more prosperous than the pig-iron trade; and this also is a good omen for the future, there being no sign of the prosperity diminishing. With regard to shipbuilding, the statements in the Appendix are especially gratifying. During 1881 the building on the Clyde, the Tyne, and elsewhere has been without a parallel—the aggregate turned out on the Clyde being 45,000 tons more than in the highest previous year, namely, 1874. At the latest date, also, the report is that orders are in hand for a long period ahead, and ensuring that the shipbuilding of the current year will exceed that of any previous year in our history. The production, in fact, so far as can be judged, will not be far short this year of about a million tons gross, equal in value, as most of the building is of steamers, to about twenty millions sterling, if not more. All this helps to account for the great prosperity of the iron trade, while other metal trades, such as copper, tin, and lead, are also in various degrees favourably affected by similar demands. The singular thing, perhaps, has been that, accompanied by all this activity, there has been latterly no advance in the prices of pig-iron. The opening price in January of Scotch pig-iron was 52*s.* 4*d.*, and the closing price in December was 51*s.* 10*d.*; the lowest price touched during the year having been about 46*s.* At the same time, the price of finished iron has ad-

vanced; and we have an advance in copper from the low price of about 59*l.* per ton in May last, to 71*l.* per ton at the end of the year, and in Straits Tin from about 87*l.* in February last, to 109*l.* at the end of the year. But pig-iron, as we have seen, has remained all but stationary. The explanation partly is that, enormous as the consumption has been, still the production has remained in excess, and partly that not only has the actual production remained in excess, but the capacity of production has remained still more greatly in excess. The great rise in coal and iron in 1872 and 1873 would seem thus to have produced a state of affairs in the iron trade which makes it very difficult for almost any increase in the demand to bring about such an increase of production as will produce a great rise in prices. It does not follow, however, that general prosperity in the trade of the country should always be accompanied by so tremendous an advance in prices of what may be called the instrumental raw materials as that which took place in 1872 and 1873. For many years before that date coal had never advanced very greatly in price, even in seasons of great prosperity in trade generally, and from 1845 downwards to about 1871, there had been no enormous advance in the price of pig-iron.

"*Adverse Symptoms.*

"While the general prosperity of 1881 and the special prosperity of the iron trades have thus been in all respects reassuring, it is only fit to notice that there have been a few adverse symptoms. One of these is that the signs of improving revenue which were noticeable a year ago have not lately been continued, and it can hardly be said that the revenue of 1881, as a whole, has increased much upon that of 1880. It will also be seen on reference to the circulars respecting tea, sugar, rice, and other articles of colonial produce, that these trades have not been generally in the condition which we should look for if there was an increasing consumption among the masses, such as naturally follows a period of very great prosperity. There has been an increase in the consumption of some articles, especially of sugar; but not an increase of that great and material kind which we associate with a period of great and advancing prosperity among the masses of the community. The wine and spirit trade has also shown some amount of languor. During the last few months, also, it is to be observed that the prosperity of the cotton trade has not been what it was in the earlier months of the year, and what it had been almost all through 1880. There are great complaints, in fact, once more of the want of margin between the prices of the raw material plus the wages of the workmen and other costs of manufacturing and the prices obtainable for the manufactured article. In other textiles, also, although there seems to be a better feeling at the end of the year, there has certainly been no great improvement during the year. It will be seen, too, that the chemical trades have been in a most unsatisfactory condition towards the end of the year, and there has been a fall in the price of soda, not perhaps of a very material character in itself, but very important, considering that the fall has been from a very low price to a still

lower price. All these are signs, as far as they go, that the prosperity of the country throughout the year has not been quite uniform; that there has been a check in some directions to the advance which seemed probable at the beginning of last year; and that we have yet to wait for such a general and sweeping advance all round as took place in 1871 and 1872. Such a general and sweeping advance may yet come, but it can hardly be said to be at hand. A good deal has evidently yet to be done to bring all the various trades into such a condition that prices and wages will rise in all directions, and we shall have a repetition of what occurred ten years ago. One of the causes of this check, we fully believe, has been the rise in money which took place last autumn. A sudden change like what then took place, from low to high rates, undoubtedly checks activity in business in many directions. While not checking genuine hand-to-mouth trade, it does check, to a great extent, a good deal of borrowing, and so tends to diminish the general volume of business. No great harm may come in the end, and no great harm, we believe, will come, but the immediate effect is undoubtedly a check of some sort. As corroborating all these symptoms, it may also be noticed that the circulation of the banks at the present moment is somewhat less than the circulation at the corresponding date a year ago, showing a great tendency to economise coin or the use of money in the ordinary retail transactions of business. Of course, a high rate for money has a special effect in diminishing the active note circulation. Many of the notes which go out of the Bank of England in quiet times, when rates for money are low, really go into the tills of country and other banks, and lie there idle; whereas in active and busy times, when a good rate can be obtained for money on deposit in Lombard Street, the country and other banks send up to London every 5*l.* note which they can spare. Still, if trade had been much more active than it seems to have been, this tendency on the part of the banks to return notes from their tills would have been counterbalanced by other tendencies, and, on the whole, the note circulation would probably rather have increased than otherwise. Altogether, then, it must be admitted that there are various symptoms in trade of a character opposed to that of general and uniform prosperity.

"In this connection, also, it has to be noticed that what has happened in the financial world has really had an adverse bearing, to some extent, on trade generally. As we have noticed, there has been a fall in Stock Exchange securities during the past year, and especially a very considerable fall when the present price is compared with the highest price of last year; and all this trouble on the Stock Exchange, as well as the rise in money, means a check of some kind to trade generally. As we explained a year ago, a rise in securities is sometimes especially favourable to trade, by releasing the funds in the hands of great capitalists and contractors; but this class, if it is specially favoured by a rise in securities, is equally handicapped by a fall in securities, so that the turn in the markets which has now happened is really, to some extent, unfavourable to trade. It all assists in checking that amount of the speculative element in business which is almost essential to the swelling of the

volume of transactions to the highest possible figure, and to the perfect working of the whole industrial machine.

"*The Future of Money.*

"Turning to the future, the discussion, we think, may be divided into three branches, relating to the future of money, the future of securities, and the future of trade. All these questions are intimately related to each other, but to a certain extent also they are distinct, and it may be convenient to discuss them separately.

"Beginning with money, we cannot but think that the prospect, as far as the general prosperity of the trade of the country is concerned, is really not of a very favourable description. The causes which have brought about the advance of money during the past year, and which we clearly foreshadowed when we wrote a year ago, are still in operation. The rise in money, as we then pointed out, has been occasioned mainly by the usual causes of a rise of money in a time of prosperity, namely, an increase in the demand for general currency purposes. The increase in the demand in the present case has come mainly from the United States, which has apparently increased its currency during the last three or four years by about fifty millions sterling, if not more, part of this amount having been obtained from Europe; but there has also been a considerable increase in other directions, the note circulation of the Bank of France being considerably more than it was a year ago, and that of the Bank of Germany having also largely increased. Such a demand for more currency inevitably follows good and prosperous trade, and as it weakens the reserves of the banks, it also as inevitably causes a rise in the value of money. The peculiarity of the rise last year was that it came suddenly. It ought, perhaps, as we pointed out when we were writing a year ago, to have come in the course of 1880. It was only prevented coming that year by the unwise course of the Bank of France in permitting its reserve of gold to fall so low as to endanger the maintenance of a gold standard in that country. All that has happened in 1881 is that the Bank of France was no longer able to repeat the venturesome policy which it tried in 1880, and, as a consequence, to protect its reserve, and even to increase it, it was obliged to maintain and advance its rates of discount, along with those of the Bank of England and other European banks. Hence it has happened that the rise, once begun, has been maintained, and there has been no going back, the state of trade being such everywhere throughout the world as rather to cause a continuance of the demand upon the Bank of England for currency, than the return of coin to that institution, which would no doubt have happened if trade had been at all slack. The Italian loan, which we have already referred to, has, of course, had some influence in determining the advance in money, when it actually did happen, and in maintaining that advance. In the circumstances of the money market generally, as they had come to exist during the course of last year, the appearance of a new demand for gold, amounting to 16 millions sterling, although there were two years in which this demand was to be satisfied, has had quite a decisive effect upon the

course of events. It has made it quite impossible, if it had not previously been made impossible, for the Bank of France to revert to a policy such as it followed a year ago. It has made sure, as it were, that whatever surplus tended to accumulate in the banks would be taken away, so that there would be no surplus for them. Still, we cannot consider that the present situation would have been much different from what it is, even if there had been no Italian loan. Probably, but for that incident, the prices of securities would have gone up one or two degrees further; speculative activity in trade would have been developed a little more than it was; and then precisely those circumstances of dearness of money and general stringency which are now felt would have been brought into existence. The Italian loan, in this view, has possibly precipitated events for a month or two, or possibly even for six months, but it has had no other effect. We must always look for some such incident when trade is highly expanded and the Stock Exchange markets are inflated. Such being our view of the circumstances, we cannot look for any immediate fall in the value of money. There is no possible surplus of coin or bullion from any quarter coming into the banks; the United States absorbs in its own currency all the gold that is produced there; very little gold comes into the West of Europe from the East, Germany and Austria, apparently, as they have done for many years, continuing to intercept any surplus which Russia might be able to send away; while the supplies of Australian gold and of gold from any other quarter of the world have long been on quite an insignificant scale. The only other source of supply to the banks would be a moderate falling off in the activity of trade diminishing the amount of currency required by the public; but at present, in spite of the few adverse symptoms which we have noticed, the tendency on balance still is for trade rather to improve than otherwise. It takes a long period of dear money, in fact, to do much to check trade. We must anticipate, then, that the tendency will be for money even to get dearer than it has been during the last few months. The demands for currency are likely on the whole, we believe, rather to increase than to diminish, and in the absence of any new supply from the mines, this tendency, at a point, may create a very considerable stringency in money. What is still more important, perhaps, the combination of circumstances is now such that at any moment something like a monetary crisis or panic may break out. What is passing in France now has shown clearly that in that country there is only the smallest of intervals to be passed over for a money panic to break out. The panic may, of course, be averted, but no one would venture to predict that it will be averted; and if there is no panic there will still be something like a crisis.* The New York money market, also, as we have pointed out, has been for a long time in a highly sensitive condition, and we cannot but look with some anxiety to what may happen in that market during the coming spring or autumn. By comparison with all the others, the London money

* This article, it must be remembered, was written before the actual culmination of the Paris Bourse crisis, and the advance of money in London which it occasioned.

market is undoubtedly very sound, the clearing out which followed on the City of Glasgow Bank failure in 1878 having been comparatively recent. Still, we shall be affected here by what happens in other countries; and if there is a panic anywhere, the stringency in the London money market may at any moment become very severe. We have only to consider what would be the result of the withdrawal of merely two millions from the Bank of England for Paris at the present moment, to see how much our own money market is now at the mercy of the great events which are possible both in Paris and in New York.*

"*The Future of Securities.*

"In last week's *Statist* we expressed an opinion as to the future prospects of the stock markets, and would refer our readers to the article, which the space at our command prevents our reproducing here.

"*The Future of Trade.*

"While the price of money is thus likely to remain dear, and the prices of securities to be highly sensitive, and to fall rather than advance, the prospects of trade, as a whole, remain fairly satisfactory. They will be affected unfavourably, we may be sure, by the general conditions of the money market and of the markets for securities, but the other causes of improvement which have been going on so long are likely—for a considerable time, at any rate—to be stronger than the adverse causes which we have described, and any other adverse causes which seem now in existence. We cannot but look, at any rate, for a continuance of the improvement in the iron and metal trades, and in many other trades of the country as to which the reports continue to be highly satisfactory. Those interested affirm with one voice that orders are booked for a very large part of the current year, and as there is comparatively little speculation in general business, the speculative activity of the last year or two having been developed in other directions, the general conditions seem all to be favourable to an increase of the volume of trade transactions and an increase of the profits of trade. Prices, fortunately, are still low, and while there is full employment for labour, the rate of wages is also low compared with what it was—at least in years like 1872 and 1873. These are all conditions highly favourable to good trade, and on the principle of like causes producing like effects, we cannot but expect that what has caused good trade in the past will cause good trade in the future. The mere fact, also, that trade has been good for two years past tends to make it good for some time to come, there being a series of prosperous, as there is at other times a series of adverse, years. We should advise those connected with trade, however, to watch narrowly the signs on the horizon as they appear in the money market or the market for securities. A great shock to credit occurring from any cause, and, in the absence of such a shock to credit, a continuance of very high rates for money, with occasional stringencies in the money market, will tend to influence trade

* See note on previous page.

unfavourably, to produce a tendency towards falling rather than rising prices, and so to embarrass the general merchant, and to cause that general uneasiness and discredit which are unfavourable to many descriptions of business. We see nothing in what is happening to cause any uneasiness respecting the growth of sound and profitable business; but there is much which ought to produce a greater degree of anxiety and caution than what has perhaps been necessary during the last three years. It would be absurd to make predictions. We are, of course, only noting that the conditions appear to have become, during the past year, less favourable to a growing improvement in business than they were either at the beginning of last year or at the beginning of 1880. The year 1881, in fact, has been a year in which the prosperity of trade would seem, to some extent, to have culminated, or to have approached its culmination. Although that prosperity continues for some time longer, yet the general conditions are more mixed, and we must expect, during the current year, at least the foreshadowings, if not the actual beginning, of a change in the opposite direction.

"*Conclusion.*

"We may sum up very briefly the points in this long statement. The year 1881, though prosperous in itself, fully answering, or almost fully answering, to the expectations which were formed at its beginning, has been a year of a very different character from 1880. It has been full of interesting events, including a semi-panic in the New York money market, a great rise in money in Western Europe in the autumn, and the symptoms of an approaching convulsion on the stock exchanges of France, which appears now to be in actual progress. The result is, that although the prospect for trade remains not unsatisfactory at the beginning of 1882, yet, as the conditions of high rates for money and of an unsettled market for securities are probable, and as there are some other causes in existence adverse to trade prospects, it is not unlikely that the year 1882, though itself of a satisfactory character as regards trade, will show us still more clearly than 1881 has shown the probability of a change before long to an opposite state of things. There will probably be very great ups and downs. It is quite probable that what is now going on in France may check business for some of the earlier months of the year, and that there will be a considerable reaction in the opposite direction later on; but it is not safe to predict as much as this. We should not go beyond the anticipation of a succession of new and striking events, of which the exact end cannot be foreseen. It is not at any rate certain that the causes of improvement in trade, strong as they are, will be able to overcome all the possible adverse influences, and make the year 1882 occupy quite the same place in the series of prosperous years which commenced in 1879, as was occupied by 1872 in the series of prosperous years which commenced in 1869."

The contents of the index to the supplement before quoted, is appended, as on former occasions:—

Introduction.

General Prosperity of 1881—The Iron and Shipbuilding Trades—Adverse Symptoms—The Future of Money—The Future of Trade.

The Foreign Trade of 1881.

Charts.

(*On Coloured Supplement.*)

Bank of England—Bank of France—Indian Exchange Rate and Price of Silver—London Exchange Rate on Berlin and Paris—New York Exchange Rate on London—London Rate on Italy—Three per Cent. Consols and Indian Four per Cent. Stock—Colonial Government Loans—European Government Loans—United States Government Loans—Central and South American Government Loans—British Railway Ordinary Stocks—Canadian Railway Securities—United States Railroad Securities—Banks.

Extracts from Trade Circulars.

(*Illustrated with Diagrams showing the Course of Prices.*)

The Iron Trade—Engineering—Shipbuilding—Freights—Copper—Lead—Tin—Tin-plates—Spelter—Coal—Chemicals—Petroleum—Tallow—Turpentine—Cotton—Wool—Silk—Jute—Hemp—Leather—Indigo—Wheat—Rice—Sugar—Tea—Coffee—Cocoa—Wines and Spirits—Pepper.

Index to Tables.

Bank Returns—

Bank of England—Bank of France—Bank of Germany—Bank of Austria—Bank of the Netherlands—Associated New York Banks—Savings Banks.

Clearing House Returns—

London Bankers' Clearing Returns—Settlings on 4th of the Month.

Stock Exchange Settling Days—Foreign Market Rates of Discount—Exchanges and Bullion—Bullion—Allotments of Indian Council Bills in 1879—Public Revenues—Stock Exchange Securities—Traffic Returns—Pauperism—Prices of Wholesale Commodities.

III.—*The Fires in London during the Year* 1881, *and the Metropolitan Fire Brigade.*

The following particulars are taken from Captain Shaw's Report for 1881, to the Metropolitan Board of Works, in continuation of similar notices for previous years:—

"The number of calls for fires, or supposed fires, received during the year has been 2,376. Of these 240 were false alarms, 145 proved to be only chimney alarms, and 1,991 were calls for fires, of which 167 resulted in serious damage, and 1,824 in slight damage.

"These figures refer only to the regular calls for fires, or supposed fires, involving the turning out of firemen, fire engines, fire escapes, horses, and coachmen; they do not include trifling damages by fires which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire, which are separately accounted for further on.

"The fires of 1881, compared with those of 1880, show an increase of 120; and compared with the average of the last ten years, an increase of 351.

"The following table gives the result both in actual numbers and percentages:—

Year.	Number of Fires.			Percentages.		
	Serious.	Slight.	Total.	Serious.	Slight.	Total.
1866.....	326	1,012	1,338	25	75	100
'67.....	245	1,152	1,397	18	82	100
'68.....	235	1,433	1,668	14	86	100
'69.....	199	1,373	1,572	13	87	100
'70.....	276	1,670	1,946	14	86	100
'71.....	207	1,635	1,842	11	89	100
'72.....	120	1,374	1,494	8	92	100
'73.....	166	1,382	1,548	11	89	100
'74.....	154	1,419	1,573	10	90	100
'75.....	163	1,366	1,529	11	89	100
'76.....	166	1,466	1,632	11	89	100
'77.....	159	1,374	1,533	10	90	100
'78.....	170	1,489	1,659	10	90	100
'79.....	159	1,559	1,718	9	91	100
'80.....	162	1,709	1,871	9	91	100
'81.....	167	1,824	1,991	8	92	100

"The number of fires in the metropolis in which life has been seriously endangered during the year 1881 has been 107; and the number of those in which life has been lost has been 29.

"The number of persons seriously endangered by fire has been 154, of whom 114 were saved, and 40 lost their lives. Of the 40 lost, 16 were taken out alive, but died afterwards in hospitals or elsewhere, and 24 were suffocated or burned to death.

"The number of calls for chimneys has been 4,367. Of these 1,458 proved to be false alarms, and 2,909 were for chimneys on fire. In these cases there was no attendance of engines, but only of firemen with handpumps.

"The number of journeys made by the fire engines of the 53 land stations has been 28,441, and the total distance run has been 62,904 miles.

"The quantity of water used for extinguishing fires in the metropolis during the year has been 17,232,682 gallons—in round numbers a little more than 17 million gallons, or about 76,931 tons. Of this quantity, about 36,669 tons, or nearly one-half of the whole, was taken from the river, canals, and docks, and the remainder from the street pipes.

"During the year there have been 3 cases of short supply of

water, 33 of late attendance of turncocks, and 9 of no attendance, making altogether 45 cases in which the water arrangements were unsatisfactory.

"The strength of the brigade at present is as follows:—

53 land fire engine stations.
11 moveable land stations.
121 fire escape stations.
4 floating „
3 large land steam fire engines.
35 small „
78 six-inch manual fire engines.
37 under six-inch manual fire engines.
137 fire escapes and long scaling ladders.
3 floating steam fire engines.
2 steam tugs.
4 barges.
29 hose carts.
15 vans.
2 trollies.
53 telegraph lines.
7 telephone „
7 fire alarm circuits, with forty-four call points.
536 firemen, including chief officer, second officer, superintendents, and all ranks.

"The number of firemen employed on the several watches kept up throughout the metropolis is at present 105 by day and 243 by night, making a total of 348 in every twenty-four hours; the remaining men are available for general work at fires.

"Our list of wounds and other injuries for 1881 is, as usual, very large; but this may be sufficiently accounted for by the manner in which the work has been done. Success in extinguishing fires cannot be attained without a proportionate risk on the part of the firemen.

"The fire alarm circuits have been of great service during the past year, and have undoubtedly enabled us in some instances to save both lives and property; but we still continue to be harassed by occasional false alarms through them. The magistrates seem determined to punish most severely anyone detected in doing damage to them, and the vigilance of the police is beyond all praise; but it is not on either the magistrates or the police that we must depend ultimately for the protection of these posts. Nothing but the assistance of the public can make them really safe, and I am bound to say that in this particular there is a very marked improvement during the past year. Indeed, I am aware that anyone discovered by a passing crowd in tampering with an alarm post would be in danger of a summary punishment far more severe than any which a magistrate would inflict. On the whole, we have reason to be satisfied with what the authorities and the public have done in this matter, and I have every hope that each succeeding year will be characterised by even a greater advance in the value of these most useful aids to our efficiency.

"The state of the Brigade with regard to discipline and general efficiency is quite satisfactory, and all ranks vie together to do

everything in their power to protect the metropolis from the ravages of fire. The labour of the past year has been unusually severe; but the officers and men have worked with zeal and spirit, and, I think I may venture to add, with something more than their usual success."

From the tables appended to the report the following particulars are obtained :—

(*a*) The fires classified according to occupations, arranged in the order of frequency of occurrence; to which are added, for the purpose of comparison, the corresponding figures for the three previous years :—

Number.	Occupations.	Number of Fires.			
		1881.	1880.	1879.	1878.
1	Private houses	427	342	399	358
2	Lodgings	236	247	172	203
3	Victuallers	68	53	58	60
4	Cabinet makers	38	27	30	27
5	Grocers	33	39	20	28
6	Coffee houses	33	31	32	25
7	Oil and colourmen	32	40	29	28
8	Drapers	32	35	30	29
9	Builders	32	34	24	14
10	Unoccupied	31	14	10	10
11	Boot and shoe makers	30	49	24	21
12	Tailors, clothiers, and outfitters	26	33	25	30
13	Under repairs and building	25	24	23	36
14	Booksellers, binders and stationers	24	23	18	15
15	Offices	24	16	17	9
16	Hotels and club houses	23	18	11	14
17	Greengrocers and fruiterers	23	16	25	15
18	Farming stock	20	31	11	9
19	Tobacconists	19	17	27	22
20	Beershop keepers	19	15	10	13
21	Furniture makers and dealers	19	14	12	11
22	Printers	18	15	11	17
23	Bakers	16	21	15	11
24	Corn dealers	16	13	—	—
25	Contractors	16	10	—	—
26	Furriers and skinners	15	10	10	10
27	Engineers and machinists	14	11	12	9
28	Stables	13	12	23	19
29	Public buildings, not theatres	13	—	—	—
30	Warehouses	12	12	—	—
31	Cheesemongers	12	—	—	—
32	China, glass, and earthenware	11	—	—	—
33	Schools	11	—	—	—
34	Laundries	10	10	—	—
35	Brushmakers	10	—	—	—
		1,401	—	—	—
	Remainder, varying from 9 to 1	590	—	—	—
		1,991	—	—	—

(*b*) A list of the fires classified under the causes to which they have been assigned, and arranged in the order of frequency of occurrence:—

Causes.	Number of Fires.
1. Unknown	462
2. Lamps (not gas) and lights (thrown down)	323
3. Sparks from fires, &c.	218
4. Gas (in various ways)	214
5. Defective, or improperly set—flues, ovens, furnaces, boilers, stoves, &c.	156
6. Candles	145
7. Children playing with fire, matches, &c.	76
8. Overheating of—flues, ovens, furnaces, boilers, stoves, &c.	74
9. Hot ashes	50
10. Smoking tobacco	40
11. Boiling over, or upsetting of fat, pitch, &c.	40
12. Foul flues	35
13. Airing linen and drying stoves	35
14. Lucifer matches	23
15. Spirits, or vapour of spirits, in contact with flame	17
16. Lime slaking by rain and otherwise	16
17. Spontaneous ignition	14
18. Incendiarism	8
19. Fumigating	7
20. Intoxication	5
21. Plumbers at work	5
22. Chemicals explosion	4
23. Fire, clothes coming in contact with	4
24. Doubtful	3
Miscellaneous, varying from 3 to 1	17
Total	1,991

(*c*) The following table giving the totals of the fires for each day of the week for the last ten years, shows on the average that the largest number of fires occur on Saturday and the smallest number on Monday. The annual average number of fires for the last ten years is 1,654:—

Years.	Sunday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Total.
1872....	199	206	213	207	220	220	229	1,494
'73....	202	209	237	199	230	243	228	1,548
'74....	222	228	228	195	240	231	229	1,573
'75....	200	203	231	227	236	209	223	1,529
'76....	260	218	226	235	242	221	230	1,632
'77....	192	218	212	224	243	216	228	1,533
'78....	260	191	271	234	214	236	253	1,659
'79....	235	212	231	257	264	251	268	1,718
'80....	288	262	253	259	254	266	289	1,871
'81....	270	267	315	288	279	253	319	1,991
Total...	2,328	2,214	2,417	2,315	2,422	2,346	2,496	16,538

IV.—*German Literature of* 1880 *and* 1881.

The following is taken from the *Publishers' Circular* of the 1st February, 1882:—

"Systematic view of the literary productions of the German bookselling trade in 1880 and 1881, extracted from the *Börsenblatt*:—

	1880.	1881.
1. Collections or sets of works—literary history, bibliography	377	411
2. Divinity	1,390	1,472
3. Law, politics, statistics, trade	1,557	1,469
4. Medicine, veterinary	790	817
5. Natural history, chemistry, pharmacy	787	924
6. Philosophy	125	148
7*a*. Education, German school-books, physical education	1,950	1,924
7*b*. Juvenile books	496	490
8. The classics and oriental languages, antiquities, mythology	533	574
9. Modern languages, old German	506	461
10. History, biography, memoirs, letters	752	779
11. Geography and travel	356	352
12. Mathematics and astronomy	201	186
13. War, hippology	353	367
14. Mercantile science, technology	583	626
15. Engineering, mechanics, mining, nautical	403	463
16. Sport and forestry	112	99
17. Domestic economy, agriculture, gardening	433	417
18. Belles lettres, novels, poems, drama, &c.	1,209	1,226
19. Fine arts—painting, music, &c.; shorthand	627	581
20. Popular literature, almanacks	657	639
21. Freemasonry	20	23
22. Miscellaneous	423	402
23. Maps	301	341
Total	14,941	15,191

V.—*English Literature in* 1881.

The following particulars are taken from the *Publishers' Circular* of 31st December, 1881, in continuation of a series of similar extracts for previous years:—

"Most of our readers probably saw a paragraph in the newspapers not long ago to the effect that the production of books was not on the increase, as might naturally be expected from the greater number of readers which every day must bring with it, due to the spread of education and the steady growth of population. The slight lessening of the number of publications—that is, books—is ascribed by the statisticians to the enormous development of the periodical press, whether in magazines, weeklies, or in that daily miracle the morning paper. However that may be, the attentive

reader will have observed that our tables of December, 1881, and December, 1880, faithfully reflect the slight pause in the tide of books (properly so called) which flows from the press. The difference, thus far, is very slight. There are about three hundred works less recorded this year than during the last, which is exactly one for each working day.

Analytical Table of Books Published in 1881.

Subjects.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total of Books on each Subject for the Year.	
Theology, sermons, biblical, &c.	*31	59	39	95	58	53	55	34	25	78	84	133	744	
	† 4	21	16	23	17	12	17	14	6	21	22	28	201	
													—	945
Educational, classical, and philological	*15	37	40	95	51	43	27	36	25	52	63	55	539	
	† 6	12	8	21	9	15	9	4	9	17	16	17	143	
													—	682
Juvenile works and tales	*19	10	10	18	10	8	7	15	2	93	66	134	392	
	† 5	4	8	5	1	8	8	10	6	20	16	17	108	
													—	500
Novels, tales, and other fiction	* 6	40	28	45	21	28	29	38	20	52	49	90	446	
	† 1	12	14	20	22	14	13	13	29	31	32	27	228	
													—	674
Law, jurisprudence, &c.	* 1	6	1	19	3	1	4	7	4	2	7	14	69	
	† 2	6	3	16	3	7	3	5	—	5	7	7	64	
													—	133
Political and social economy, trade and commerce	* 9	23	9	28	10	5	7	5	6	7	10	17	136	
	†—	1	2	9	2	2	3	3	—	—	—	4	26	
													—	162
Arts, science, and illustrated works	*13	26	19	61	23	26	28	18	10	30	27	63	344	
	† 6	11	11	13	6	11	6	7	4	10	13	10	108	
													—	452
Voyages, travels, and geographical research	* 8	12	12	24	19	26	12	13	15	15	17	27	200	
	† 1	5	4	11	10	8	15	9	7	5	2	14	91	
													—	291
History, biography, &c.	*10	11	26	35	40	26	19	14	13	30	52	80	356	
	† 4	2	3	4	11	13	3	6	8	4	12	11	81	
													—	437
Poetry and the drama	* 7	6	2	24	6	10	6	13	4	3	11	19	111	
	†—	3	—	3	4	2	2	7	2	—	9	5	37	
													—	148
Year books and serials in volumes	*33	41	19	26	16	13	18	21	6	20	34	88	335	
	† 1	1	—	—	—	—	—	—	—	—	—	2	4	
													—	339
Medicine, surgery, &c.	* 3	10	2	16	8	8	7	12	3	11	8	20	108	
	† 2	6	2	9	5	7	6	7	—	2	9	1	56	
													—	164
Belles lettres, essays, monographs, &c.	*14	21	6	19	8	14	12	8	7	7	18	15	149	
	† 4	6	5	9	8	11	10	6	3	13	16	7	98	
													—	247
Miscellaneous, including pamphlets, not sermons	* 4	7	6	14	18	15	11	23	9	13	26	35	181	
	† 4	3	1	3	2	12	1	4	6	2	9	4	51	
													—	232
	213	402	296	665	391	393	339	352	229	543	635	948		5,406

* New books. † New editions.

"The analytical table is divided into fourteen classes; also new books and new editions:—

Divisions.	1880.		1881.	
	New Books.	New Editions.	New Books.	New Editions.
Theology, sermons, biblical, &c.	708	267	744	201
Educational, classical, and philological	507	168	539	143
Juvenile works and tales	564	155	392	108
Novels, tales, and other fiction	380	200	446	228
Law, jurisprudence, &c.	87	58	69	64
Political and social economy, trade and commerce	204	22	136	26
Arts, sciences, and illustrated works	362	117	344	108
Voyages, travels, geographical research	211	74	200	91
History, biography, &c.	286	77	356	81
Poetry and the drama	132	55	111	37
Year books and serials in volumes	353	—	335	4
Medicine, surgery, &c.	148	54	108	56
Belles lettres, essays, monographs, &c.	80	86	149	98
Miscellaneous, including pamphlets, not sermons	271	82	181	51
	4,293	1,415	4,110	1,296
	5,708		5,406	

VI.—*Emigration and Immigration in the Year* 1881.

The following is a copy of Mr. Giffen's report to the secretary of the Board of Trade, with reference to statistical tables relating to emigration and immigration from and into the United Kingdom in the year 1881:—

"Sir,—I have the honour to submit herewith the tables relating to emigration and immigration from and into the United Kingdom for the year 1881, with comparative tables for a series of years past:—

"The tables are in the same form as that which has now been adopted for some time, with the view of bringing out the principal facts which they serve to indicate, and throwing light on economic and other circumstances which determine the movements of emigration and immigration themselves.

"There appears to be a general resemblance between the facts of 1881 and of the previous year. They are both years of large emigration and immigration and of a large excess of emigrants over immigrants, the figures of 1881 being larger than those of 1880, showing that up to last year the movement had been an ascending one from the low level which was reached in years like 1876 and 1877. As will be seen afterwards, there are some interesting

differences between the two years, the most important, perhaps, being the falling off of the Irish emigration as compared with that of 1880, which exhibited, it will be remembered, a sudden and large increase as compared with recent years. This variation, however, important as it is, does not alter the fact that the general character of the emigration movement was much the same in 1881 as in 1880.

"Following the usual order of description in previous reports, it is proposed to state first the exact figures as to the increase of emigration and immigration, and of the excess of emigrants. As to emigration, these are:—

(*a.*) *Increase of Emigration.*

	Total, including Foreigners.	Emigrants of British and Irish Origin only.
Number of emigrants in 1881.....	392,514	243,002
„ '80.....	332,294	227,542
Increase	60,220	15,460

"Thus the total number of emigrants in 1881 is 60,220 above the large figure of 1880, although in that year there had been a large increase over the total for 1879, as in 1879 over the total for 1878. The number of emigrants last year was, in fact, 392,514, or more than 1,000 per day. This is about 80,000 more than the highest figure touched in any year in the previous decade, with the exception of 1880 itself, which has been already referred to. As regards emigration of British and Irish persons only, the figure is also very large, the increase being 15,460 over the numbers of 1880, although in that year there was a large increase over the numbers of 1879, as in 1879 over the numbers of 1878. The total now is 243,002, which is higher than the highest year of the previous decade, viz., 1873, when the figure of 228,345 was reached, and has only been exceeded in two years since 1853, when the nationality of emigrants began to be distinguished; these years, as was noticed in my last report, being 1853 and 1854, when the corresponding figures were 278,129 and 267,047. In proportion to the population, which is so much larger now than it was nearly thirty years ago, the emigration is, of course, much less important than it was then; but the totals are large enough to vindicate a maximum period in the amount of emigration.

"The figures exhibit an interesting variation between the increase of the emigration of foreigners last year, and the increase of the emigration of persons of British and Irish origin only. The total increase being 60,220, and that of persons of British and Irish only being 15,460, it appears that the increase of foreign emigrants and those whose nationality is unknown must be 44,760. From a total of 104,752 in 1880, these have, in fact, increased to 149,512

in 1881. The inference which might thus be drawn at first from the large increase of the total emigration, without observing its character, to the effect that the tide of real emigration from the United Kingdom was largely increasing up to last year would not be justified. That emigration remains at a large figure, and there is an increase over the figure for 1880, which is not unimportant, but the main increase last year did not concern the population of the United Kingdom as a whole. The increase is, in fact, due to the passage of emigrants through the United Kingdom, and really affects the returns of Germany and other countries of Northern Europe rather than our own. The variation, it will be seen from what is afterwards stated, arises mainly from the decline in the Irish emigration already referred to, English and Scotch emigrants having both increased in numbers. Still the effect is that the emigration of persons belonging to the United Kingdom did not, as a whole, increase greatly in 1881.

"The facts as to the increase of immigration are next to be noticed. These are:—

(*b.*) *Increase of Immigration.*

	Total, including Foreigners.	Immigrants of British and Irish Origin only.
Number of Immigrants in 1881	77,105	52,707
„ '80	68,316	47,007
Increase in 1881	8,789	5,700

"Upon these figures the same remark falls to be made as that upon the increase of immigration shown a year ago. There is an increase of some kind, but the increase is inconsiderable compared with the increase of emigrants. As regards, however, the movement of persons of British and Irish origin only, the increase of immigrants, small as it is, is important. Against an increase of 15,460 in the emigration, there is to be set an increase of 5,700 in the immigration, thus making the increase of the excess of emigrants of British and Irish origin only, as will be noticed below, under 10,000, which is not a large figure compared with the increases of recent years. The figures of immigration, though now rising, are still much below what they have been in several years since such figures began to be recorded. It remains to be seen whether they will now continue to rise simultaneously with a decline in the emigration, the change that might fairly be expected according to former experience.

"The facts as to the excess of emigrants have next to be stated; these are:—

(*c.*) *Increase of Excess of Emigrants.*

	Total Emigration and Immigration.	Emigration and Immigration of Persons of British and Irish Origin only.
Number of emigrants in 1881	392,514	243,002
„ immigrants '81	77,105	52,707
Excess of emigrants	315,409	190,295
Corresponding excess in 1880	263,978	180,535
„ '79	163,190	126,338
„ '78	69,712	57,958
„ '77	38,123	31,305
„ '76	44,665	38,065

"Here, again, the variation between the increase of foreign emigration and the increase of emigration of persons of British and Irish origin only, is very noticeable. While the total excess of emigrants is unprecedentedly large, being no less than 315,409, or close upon 1,000 per day, and while it exhibits an increase, as compared with 1880, of 51,431, yet the excess of emigrants of British and Irish origin only, though also large, amounting to 190,295, is yet only 9,760 more than in 1880. As regards the latter total itself, however, the remark made in last year's report is still applicable. It is impossible to compare it with any similar period formerly, the distinction between foreigners and persons of British and Irish origin only, having only been made in the emigration statistics since 1876; but it may be inferred from a comparison of the emigration figures that the above excess was probably as large as in any year since 1853 and 1854. The total real loss of population to the United Kingdom annually was not rapidly increasing last year, but it was of large amount.

"There is an increased loss, however, as may be inferred from what is noticed afterwards, of English and Scotch population, as distinguished from the Irish population. But for the special change in the Irish emigration, the increased emigration from the United Kingdom would have corresponded fairly with the increased emigration as a whole, including foreigners.

"The coincidence between these large figures of emigration, and the fact that they occur in years of trade revival following a great depression, has been so much discussed in former reports that a mere reference to them may now be sufficient. All that has now to be added is that the revival of trade and the large emigration were both continued throughout last year. It has still to be seen whether the decline of emigration when trade again declines, and its almost complete cessation in times of depression, which have been observed in former years, will again be observed. The significance of the renewed and continued increase of immigration in this connection has also been adverted to already. In stating the apparent facts in former reports, and drawing attention to them, I have been careful

to do no more than suggest an inference as to the causes of the ebb and flow of emigration, without fully discussing it or pressing it in any way, which would perhaps be out of place in a report like the present. It appears desirable still to follow the same course, but it may be hoped that in a few years more, when a new cycle of depression and prosperity has been completed, the facts may be even clearer than they are now; and the suggested inference, or perhaps a complete theory, explaining all the facts, may be established. It is undoubtedly to be regretted that the facts as to immigration, which are so necessary to supplement those of emigration itself, were neglected in the earlier years.

"As has been noticed also in former years, the increased emigration continues to be mainly to the United States and British North America; the emigration to Australasia, which fell off largely last year, having again fallen off a little. The facts are exhibited in the following table :—

Destinations of Excess of Emigrants over Immigrants among Persons of British and Irish Origin only in the Undermentioned Years.

Country of Emigration and Immigration.	Excess of Emigrants in					
	1876.	1877.	1878.	1879.	1880.	1881.
United States	(−)143*	603	20,654	71,758	140,052	146,323
British North America	2,706	2,033	4,448	14,455	16,214	18,151
Australasia	29,617	25,501	32,272	35,992	18,274	16,805
All other parts	5,885	3,168	584	4,133	5,995	9,016
Total	38,065	31,305	57,958	126,338	180,535	190,295

* Excess of immigrants.

"The falling off in the emigration to Australasia, while the total emigration is so large, appears again to be most significant. The proportion is now about 9 per cent. only, whereas several years ago, with much smaller figures, two-thirds of the whole excess of emigrants went to Australasia. Apparently the assistance which the Australian Colonies offer to intending immigrants is most largely afforded in times of depression here, or perhaps the decline of emigration to Australasia is of a more permanent character. There is a noticeable increase in the excess of emigrants to "All other parts," which is accounted for mainly by an increase of passengers to the Cape of Good Hope and Natal. The figures, however, as compared with the aggregate emigration from the United Kingdom, are still insignificant.

"The following summary table, showing the numbers of cabin and steerage passengers included in the tables of emigration is continued from former reports. The increase in 1881, it will be observed, is almost entirely in steerage passengers, an obvious indication of the real nature of the passenger movement of last year :—

Numbers of Cabin and Steerage Passengers leaving the United Kingdom for Places out of Europe, in each of the Years from 1876 *to* 1881 *inclusive.*

Years.	Cabin Passengers.	Steerage Passengers.	Total.
1876	41,900	96,322	138,222
'77	37,147	82,824	119,971
'78	43,168	104,495	147,663
'79	43,928	173,235	217,163
'80	50,734	281,560	332,294
'81	54,270	338,244	392,514

"Coming now to the question of the Irish emigration, the increase in which was so noticeable a feature of last year's report, the great falling off, as compared with the numbers of 1880, already adverted to, has to be noticed. The numbers in 1880 were 93,641, and last year they were 76,200 only. The proportion to the whole emigration from the United Kingdom of persons of British and Irish origin, which also rose suddenly in 1880, from 25 to 41 per cent., has fallen again to 31 per cent. The facts are shown in the following summary, continued from last year's report:—

Statement of the Number and Proportion of Persons of English, Scotch, and Irish Birth respectively, in the Total Emigration of Persons of British Origin, at different Periods.

Period.	English.		Scotch.		Irish.		Total.
	Number.	Per-centage of Total.	Number.	Per-centage of Total.	Number.	Per-centage of Total.	
Three yrs. 1853–55	211,013	30	62,514	9	421,672	61	695,199
Five years '56–60	243,409	39	59,016	10	315,059	51	617,484
„ '61–65	236,838	33	62,461	9	418,497	58	717,796
„ '66–70	368,327	43	85,621	10	400,085	47	854,033
„ '71–75	545,015	56	95,055	10	329,467	34	969,537
Year 1876	73,396	67	10,097	9	25,976	24	109,469
„ '77	63,711	67	8,653	9	22,831	24	95,195
„ '78	72,323	64	11,087	10	29,492	26	112,902
„ '79	104,275	64	18,703	11	41,296	25	164,274
„ '80	111,845	49	22,056	10	93,641	41	227,542
„ '81	139,976	58	26,826	11	76,200	31	243,002

"It would appear then that either, as surmised in my last report, Irish emigration in 1880 was stimulated not only by good trade in the United States but by the bad harvest of 1879 at home, or that the falling off in 1881 is due to special circumstances which have checked the natural movement; or that there was both a special stimulus to the emigration of 1880 and a special check to the emigration of 1881. Perhaps the facts of the sudden increase of Irish emigration in 1880, and its equally sudden decline last year, at the very time that the emigration of English and Scotch persons,

as well as of foreigners, largely increased, would deserve further investigation.

"The usual tables are added, showing in detail the sex, age, condition, and occupation of the emigrants; the numbers departing from each of the ports of the United Kingdom, the particulars of detention money received by emigration officers, and the amount of remittances by settlers in the United States and British North America to their friends at home, besides comparative tables.

"With regard to these remittances, however, I have again, as last year, to express my regret at the inadequacy of the data on which the statistics are based. The data are necessarily so incomplete that it may be doubted whether it was ever worth while to publish the figures, or whether it is worth while any longer to continue them."

VII.—*Notes on some Additions to the Library.*

Uebersichten der Weltwirthschaft. Von Dr. F. X. von Neumann-Spallart, Jarhgang 1880. (Stuttgart: Julius Maier.)

Dr. Neumann's *Uebersichten* for 1880 is somewhat larger than the two volumes of the same name issued previously. The author has found it necessary to give rather more information on nearly all the subjects which the book treats of. This last edition is in no way inferior to those which have already appeared. We have no hesitation in saying that it is the best work of the kind that we have yet seen. In one special particular it compares to very great advantage with certain works lately published in this country, namely, in the scrupulous adherence to the practice of giving the authorities for all figures of which use is made. One or two works we could name, which are in other respects both well planned and ably executed, fail to inspire in the reader the confidence which they may, and perhaps do, deserve, in consequence of the unfortunate absence of adequate explanation of the origin of the figures. No good is done by such want of frankness. It is, no doubt, due as much to a desire to preserve an appearance of symmetry as to anything else. A table showing the length of the telegraph lines of States outside Europe, in which the latest data for each State do not all refer to the same year, is no doubt not so pretty to look at as it would be if no mention were made of the variety in the years, but it is much more satisfactory from the point of view of science. The duty of giving full information as to what the figures are, may be said to be the first obligation of everyone who undertakes to instruct the public by means of statistics. It would, however, be paying Dr. Neumann a poor compliment to say that he always performs the primary duty of a statistician well. In most respects the present volume is so like its predecessors that we need say no more on that portion of it which deals with recent statistics of various trades, except that it has been somewhat extended. More information is given about railways, shipping, and telegraphs than on former occasions, and very excellent information

it is. But the book contains something of higher interest to the student of economics than this. Dr. Neumann has endeavoured to lay the foundation for a systematic investigation of the symptoms which make manifest the changes in the economic condition of social organisms. This cannot yet be adequately done, because we have not yet a sufficiently prolonged series of accurate figures for the purpose, but Dr. Neumann's sketch of the period 1870-80 is a most valuable contribution to the study of the subject. The following is his description of the scheme: "I divide the whole body of the symptoms of the economic condition of the world into three great groups. We distinguish first, such statistical facts relating to the economic condition as invariably bear the marks of being the necessary causes of economic and social effects, in the original sense, and which we therefore call the primary symptoms; secondly, there is another group, which appear as consequences of the former, and which may therefore be treated as secondary symptoms of the economic condition, with altered aspects and less importance; finally, there is a third group of such phenomena as are not, in the narrower sense, economic, but which, while arising from these same phenomena, have a reactive influence on them, and which we therefore term 'reflective (*reflectorische*) symptoms.'" The primary symptoms consist of statistics of the production, consumption, and movement of the articles composing wealth; the second relate to prices and wages, rates of discount, issues of new capital, dividends, market values, and failures; the third relate to such matters as strikes, emigration, pauperism, and the like. This classification may perhaps be improved in some particulars, but broadly it is correct. We hope that Dr. Neumann will be able to carry out the scheme thus explained. It is a large one, and probably more than one man could deal with by himself, but probably Dr. Neumann will be able to get over that difficulty.*

VIII.—*Additions to the Library.*

Additions to the Library during the Quarter ended 31*st March*, 1882.

Donations.	By whom Presented.
Argentine Confederation—	
Buenos Aires. Boletin de la Oficina de Estadistica de la Provincia de—(Quarterly.) Año I, Núm. 1—4. 1881	The Statistical Bureau
Austria and Hungary—	
Statistisches Jahrbuch—	
VII Heft für 1878, Landes- und Grundentlastungs. Fonde, Dotirte Politische fonde für Zwecke des Cultus und Unterrichts, Gemeinde-Haushalt	The Imperial Central Statistical Commission
V Heft für 1879, Klerus, Lehranstalten, Periodische Presse	
XI Heft für 1880, Heer, Kriegs-Marine	

* We have thought this part of the book so interesting, as to justify a translation in full. See *supra*, p. 82.

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Austria and Hungary—*Contd.*	
Statistisches Jahrbuch für Ungarn 9ter *Jahrgang* 1879—II Heft. Sanitätswesen, 1881	The Royal Hungarian Statistical Bureau
VIII Heft. Ungarns Rechtspflege und die Bewegung im Besitz und Lastenstande der Realitäten im Jahre 1879	
Magyarország Arúforgalma Ausztriával és más Országokkal. Füzet 1—6, 1881. 4to. Budapest	
PRAGUE. Statistisches Handbüchklein der königl. Hauptstadt Prag für 1879 und 1880, xxviii + 264 pp. 8vo. 1881	The Statistical Commission of Prague
Tydenní zpráva o úmrtích v Praze a obcech spojených, kteréž jsou, &c. (Current numbers)	The Statistical Bureau
Belgium—	
ANVERS. Denombrement des Habitans du Diocèse d'—fait l'année 1784. Calf, oblong folio	W. S. Jevons, Esq., LL.D., F.R.S.
BRUXELLES. Bulletin Hebdomadaire de Statistique Démographique et Médicale. (Current numbers)....	Dr. E. Janssens
Bulgaria. Résultats Préliminaires du Recensement de la Population de Janvier, 1881. 50 pp., folio. Sofia. 1881	The Statistical Bureau of Bulgaria
China—	
Imperial Maritime Customs. 4to. Shanghai, 1881—I. *Statistical Series*—	Robert Hart, Esq., Peking
No. 2. Customs Gazette. No. 51, July—September, 1881	
No. 4. Reports on Trade at the Treaty Ports for 1880. Maps and diagrams	
Denmark. Nationalökonomisk Tidsskrift. 1—3 Hefte, 1882. Kjöbenhavn.....	The Danish Political Economy Society
Egypt—	
Bulletin Trimestriel du Commerce Extérieur. 2ième année. No. 3, 1881	The Director-General of Statistics
Décret, Règlement et Instructions Relatives au Recensement Général d'Egypte du 3 Mai, 1882. 18 pp., la. 8vo. Le Caire. 1881	
France—	
Annuaire Statistique de la—4ième année. 1881. xxiii + 644 pp., la. 8vo. Paris. 1881	Ministry of Commerce
Conférence Monétaire Internationale. Avril—Mai, et Juin—Juillet, 1881. Procès-Verbaux. Folio. Paris. 2 vols. 1881	Hon. C. W. Freemantle, C.B.
Ministère des Finances. Bulletin de Statistique et de Législation comparée. Decembre, 1881, et Janvier —Mars, 1882	M. A. De Foville
Ministère des Travaux Publics. Bulletin du—Novembre, Decembre, 1881	The Ministry of Public Works
Statistique de la—Nouvelle Série, Tome VIII. Statistique Annuelle. 1878. cxxx + 432 pp. Folio. Paris 1881	The Board of Trade

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PARIS. Annuaire Statistique de la Ville de—Année 1880. xi + 622 pp., maps, diagrams, &c. la. 8vo. 1881	The General Secretariat
L'Economiste Français. (Current numbers.) Paris	The Editor
Révue Bibliographique Universelle, Paris, 1881-82—	
Partie Littéraire. Fevrier et Mars	"
Partie Technique. Decembre—Février	"
Révue Géographique Internationale. Nos. 68—72, 6ième année. Paris, 1882	"
Société de Statistique de Paris. Journal de la—Janvier—Mars, 1882	The Society
Germany—	
Monatshefte zur Statistik des Deutschen Reichs. Nos. 11, 12, 1881, No. 1, 1882	The Imperial Statistical Office, Berlin
PRUSSIA.—*Preussische Statistik*—	
Heft LXI. Die Bewegung der Bevölkerung, mit Einschluss der Wanderungen im preussischen Staate während des Jahres 1880	The Royal Statistical Bureau of Prussia
Zeitschrift des Königlich Preussischen Statistischen Bureaus. Einundzwanzigster Jahrgang 1881. Heft III, IV	
SAXONY. Zeitschrift des K. Sächsischen Statistischen Bureau's. XXVI Jahrgang, 1880. Heft iii und iv. 1881	The Statistical Bureau, Dresden
BERLIN. Veröffentlichungen des Statistischen Bureaus der Stadt; Eheschliessungen, Geburten, Sterbefälle und Witterung, &c. (Current numbers)	The Statistical Bureau of Berlin
Italy—	
Agricoltura. Notizie intorno alle Condizioni dell'—negli anni 1878-79. Vol. ii, vii + 652 pp., la. 8vo. Roma, 1881	The Director-General of Statistics
Annali dell' Industria e del Commercio, 1881-82—	
Num. 39. Commissione Centrale dei Valori per le dogane	
Atti del Congresso del Credito Fondiario	
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Atti della Commissione d' Inchiesta sull' Esercizio delle Ferrovie Italiane. Parti 1 delle. Vols. i, ii, iii. 1881	
Atti della Giunta per la Inchiesta Agraria e sulle Condizioni della Classe Agricola. Vol. iii, fasc. i e ii. Vol. iv, fasc. i, maps, 4to. Roma, 1881-82	
Bollettino Settimanale dei Prezzi di alcuni dei principali Prodotti Agrari. (Current numbers.) 1882	
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Navigazione nei Porti del Regno. Movimento della—Parte Prima e Parte Seconda. Anno xx. 1880	
Statistica del Commercio Speciale di Importazione e di Esportazione dal 1° Gennaio 1881 al 28 Febbraio 1882	
Relazione della Leva sui nati nel 1860 e delle Vicende del R. Esercito dal 1° Ottobre, 1880 al 30 Settembre, 1881	TheDirector-General of Statistics
Udine. Annuario Statistico per la Provincia di—pubblicazione dell' Accademia Udinese di Scienze, Lettere ed Arti. Anno Terzo. 251 pp., plans, &c. 8vo. Udine, 1881	
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Statistiek der Geboorten en der Sterfte naar den Leeftijd en de Oorzaken van den Dood in Nederland. Julij—December, 1881	The Statistical Society of the Netherlands
Uitkomsten der Zesde Tienjarige Volkstelling in het Koningrijk der Nederlanden op den een en Dertigsten December, 1879 (Population Statistics). In 12 vols., la. folio. 'S Gravenhage, 1881	The Netherlands Legation, London
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Sociedade de Geographia de Lisboa. Boletim da—2ª serie, Nos. 7 e 8. Map. 1881	The Society
Mozambique. Boletim da Sociedade de Geographia de—1ª serie, No. 6	,,
Roumania—	
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Comerciul Exterior, Import si Export pe anul 1876. 85 pp., la. 4to. Bucharest, 1881	The Chief of the Statistical Bureau
Russia—	
L'année agricole de 1881 en Russie. 241 + 40 pp., map, 8vo. St. Petersbourg, 1882. (In Russian)	The Department of Agriculture
Règlement Définitif du Budget de l'Empire pour l'Exercice, 1880. Rapport presenté au Conseil de l'Empire. 44 pp., la. 8vo. St. Petersbourg, 1881....	Mons. A. Vesselovsky
Société Impériale Russe de Géographie. Bulletin de la—Vol. xviii, année 1882, fasc. 1. Charts and diagrams. St. Petersbourg	The Society

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Revista Topográfica y Estadistica. Año 1, Núm. 5, folio. Alicante, 1882	The Editor
Sociedad Geográfica de Madrid. Boletín de la—Tome xi, No. 6; Tome xii, Nos. 1, 2. 1881	The Society
Sweden and Norway—	
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United States—	
Agriculture. Department of—Annual Report for 1880. 672 pp., cloth, plates, diagrams, 8vo. Washington, 1881	The Department of Agriculture
Bureau of Statistics— Quarterly Report on Imports, Exports, Immigration, and Navigation. No. 1, 1881-82 Summary Statement of Imports and Exports. Nos. 4, 5, and 6. 1881-82	Bureau of Statistics
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Internal Revenue, Report on—for 1881. cxx+ 177 pp., cloth, 8vo. Washington, 1881	
Education. Report for the year 1879. Parts I and II, diagrams, la. 8vo. Washington. 1881	
Education, Bureau of—	
Circulars of Information, 1880—	
5. English Rural Schools	
6. Report on Teaching of Chemistry and Physics in the United States	
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Circulars of Information, 1881—	
1. Construction of Library Buildings	
2. Relation of Education to Industry and Technical Training in American Schools	
3. Proceedings of the Department of Superintendence of the National Educational Association, 1881	The Bureau of Education
4. Education in France. Plans, &c., 8vo. Washington. 1880-81	
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Fifty Years of Freedom in Belgium; Education in Malta; Third International Geographical Congress at Venice in 1881; Illiteracy and Crime in France; School Savings Banks; and Education in Sheffield. 8 pp., 8vo. 1881	
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Mint. Annual Report of the Director of the—for the year ended 30th June, 1881. 119 pp., 8vo. Washington, 1881	Horatio C. Burchard, Esq.
Precious Metals. Report of the Director of the Mint upon the Statistics of the Production of—in the United States for 1880. 443 pp., cloth, plates, la. 8vo. Washington, 1881	
American Geographical Society—	
Journal of the—Vols. xi and xii, 1879-80, cloth, maps, plates	The Society
Bulletin of the—1881. Nos. 2, 3. 8vo. New York	
American Statistical Association. Constitution and Bye-laws, and list of Officers, Fellows, and Members. 13 pp., 8vo. Boston. 1881	The Association

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Bankers' Magazine. January—March, 1882. New York	The Editor
Franklin Institute. Journal of the—Vol. lxxxiii. Nos. 1—3. Philadelphia, 1882	The Institution
Medical Herald, The. Vol. iii. Nos. 33—35. Louisville, 1882	The Editor
Society for Political Education, New York— *Economic Tracts, Series* 1880-81. 12mo. (1) Atkinson (Edward). What is a Bank? What Service does a Bank perform? A Lecture (2) Political Economy and Political Science: a selected list of books recommended for general reading, and as an introduction to special study (3) Subjects and Questions pertaining to Political Economy, Constitutional Law, &c. (4) Usury Laws; their Nature, Expediency, and Influence Philpott (Henry J.) Free Trade *v.* Protection; or A Tariff for Revenue only *v.* A Tariff for Spoils only. Manual of Facts and Figures. 21 pp., 8vo. Iowa. 1881 Wells (Hon. David A.)— A Big Fraud! Such, to all concerned, is a Protective Tariff! 3 pp. (No. 2) The Cotton Ties. A Story of greed and selfishness. 4 pp. (No. 1.)	W. C. Ford, Esq.

India, Colonial, and other Possessions.

Canada. Census of 1881. 21 pp., folio	J. G. Bourinot, Esq.
Cape of Good Hope. Acts of the Parliament of the Colony of. Session 1881. Folio. Cape Town. [1881]	The Crown Agent for the Colonies
India, British—	
Trade and Navigation, Monthly Accounts. Nos. 7—10. 1881-82	The Indian Government
Trade by Land with Foreign Countries. Accounts of—No. 2. 1881-82	The Indian Government
Statement of the Trade of—with British Possessions and Foreign Countries for the five years 1876-77 to 1880-81. lviii + 64 pp., 4to. (C-3139.) 1882	C. C. Prinsep, Esq.
Statistical Abstract relating to—from 1870-71 to 1879-80. 15th number. (C-2976.) 1881	C. C. Prinsep, Esq.
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The Asiatic Society of Bengal—	
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New South Wales—	
Financial Statement of the Colonial Treasurer of—made 15th November, 1881. 248 pp., folio. Sydney, 1881	The Agent-General N.S. Wales
Registrar-General's Report on the Vital Statistics of Sydney and Suburbs, September, November, 1881....	The Registrar-General, N.S. Wales.
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Statistical Return showing the Relative Positions and Aggregate Importance of the Australasian Colonies at the close of 1880. (Sheet.) Sydney, 1881	
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Supplement to the Government Gazette, containing Vital Statistics. (Current numbers)	
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Part III, Vital Statistics, &c.	H. H. Hayter, Esq., Government Statist
,, IV, Interchange	
,, V, Law, Crime, &c.	
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,, VII, Accumulation	
Reports of the Mining Surveyors and Registrars, for the Quarter ended 30th September, 1881. Folio	Minister of Mines, Melbourne

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Railway Returns for 1879, with Summary Tables for United Kingdom for each year from 1854 to 1879. [C–2596.] 1880	
Statistical Abstract for the Principal and other Foreign Countries in each year from 1870 to 1879-80. No. 8. [C–3082.] 1881	
Trade and Navigation. Monthly Returns. December, 1881; January, February, 1882	
The Coffee and Tea Trade of the United Kingdom for three Decennial Periods, 1852-81. Sheet	R. A. Bellman, Esq.
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Judicial Statistics for 1880. Folio. 1881	
Fires in London. Report of the Chief Officer of the Metropolitan Fire Brigade, for 1881. 43 pp. 8vo.	Captain E. M. Shaw, C.B.
London. Weekly Returns of Births and Deaths in—and in twenty-seven other large English Towns, for 1881, with Annual Summary and current numbers for 1882	The Registrar-General of England
British Trade Journal. Vol. xx, No. 29, map. 1882	The Editor
Chemist and Druggist (The). February, 1882. Plates. 1882	"
The Banking Almanac and Directory for 1882	Messrs. Waterlow and Sons
Financial Reform Almanack for 1882	The Committee of the Cobden Club
The Review Almanack for 1882. Eleventh year. 220 pp., cloth, folio. 1882	Messrs. Wyman and Sons
Ireland—	
Births and Deaths in Dublin, and in fifteen of the principal Urban Sanitary Districts, Weekly Returns, with a Quarterly Summary. (Current numbers)	The Registrar-General of Ireland
Quarterly Return of Marriages to September; Births and Deaths to December, 1881. No. 72	
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Births, Deaths, and Marriages in the eight principal towns, Weekly and Monthly Returns. (Current numbers)	The Registrar-General of Scotland
Quarterly Return of Births, Deaths, and Marriages to December, 1881	
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Remarks by Medical Officer, to accompany Mortality Tables of the City of—for Quarter ending 30th September, 1881	Dr. J. B. Russell
Census 1881. The Decennial Census as a basis for the Statistics of Intervening Years. 39 pp., 8vo. Glasgow, 1881	Medical Officer of Health
Authors, &c.—	
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Statistical Atlas of England, Scotland, and Ireland. Edited by G. P. Bevan, Esq., F.G.S., D.L.—	
Part XIII, Hydrographical (Water Supply)	Messrs. W. and A. K. Johnston
„ XIV, Political	
„ XV, Population	
BOURNE (Stephen). Deficient Harvests and Diminished Exports. 22 pp., 8vo. Manchester. 1881	The Author
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Pay Hospitals and Paying Wards throughout the World. xiii + 176 pp., cloth. 8vo. 1879	
Cottage Hospitals, General, Fever and Convalescent, their Progress, Management, and Work. xiii + 550 pp., cloth. Portrait, plans, &c. 8vo. 2nd edition. 1880	„
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REGISTRATION OF THE UNITED KINGDOM.

No. I.—ENGLAND AND WALES.

MARRIAGES—To 30th September, 1881.
BIRTHS and DEATHS—To 31st December, 1881.

A.—*Serial Table of* Marriages, Births, *and* Deaths, *returned in the Years* **1881-75,** *and in the* Quarters *of those Years.*

Calendar Years, **1881-75**:—*Numbers.*

Years.....	'81.	'80.	'79.	'78.	'77.	'76.	'75.
Marriages No.	—	191,965	182,082	190,054	194,352	201,874	201,212
Births..... ,,	883,518	881,643	880,389	891,906	888,200	887,968	850,607
Deaths .... ,,	491,813	528,624	526,255	539,872	500,496	510,315	546,453

Quarters *of each Calendar Year,* **1881-75.**

(I.) Marriages:—*Numbers.*

Qrs. ended last day of	'81.	'80.	'79.	'78.	'77.	'76.	'75.
March.....No.	37,914	41,238	35,956	39,137	39,704	41,559	42,376
June ..... ,,	50,230	45,844	46,623	48,584	49,065	51,327	48,410
September ,,	48,529	47,703	45,121	46,628	47,743	49,160	49,826
December ,,	—	57,180	54,382	55,705	57,840	59,828	60,600

(II.) Births:—*Numbers.*

Qrs. ended last day of	'81.	'80.	'79.	'78.	'77.	'76.	'75.
March.....No.	225,788	221,699	226,056	220,792	230,241	230,080	214,862
June ..... ,,	225,467	232,920	220,966	228,620	223,249	226,097	214,939
September ,,	215,586	219,023	218,668	222,604	213,195	216,302	211,109
December ,,	216,677	208,001	214,699	219,890	221,515	215,489	209,697

(III.) Deaths:—*Numbers.*

Qrs. ended last day of	'81.	'80.	'79.	'78.	'77.	'76.	'75.
March.....No.	138,582	145,787	155,916	139,373	134,931	142,218	162,256
June ..... ,,	120,825	125,366	132,003	129,096	131,244	126,239	130,999
September ,,	109,956	131,241	103,919	129,664	109,467	119,977	121,547
December ,,	122,450	126,230	134,417	141,739	124,854	121,881	131,651

Annual Rates of MARRIAGES, BIRTHS, *and* DEATHS, *per* 1,000 PERSONS LIVING *in the Years* **1881-75**, *and in the* QUARTERS *of those Years.*

Calendar YEARS, **1881-75**:—*General Ratios.*

YEARS.....	'81.	Mean '71-81.	'80.	'79.	'78.	'77.	'76.	'75.
Estmtd. Popln. of England *in thousands* in middle of each Year....	26,055,	—	25,709,	25,367,	25,029,	24,696,	24,367,	24,043,
Persons Married	—	16·2	14·9	14·4	15·2	15·7	16·5	16·7
Births	33·9	35·4	34·2	34·7	35·6	36·0	36·3	35·4
Deaths.....	18·9	21·4	20·5	20·7	21·6	20·3	20·9	22·7

QUARTERS *of each Calendar Year*, **1881-75.**

(I.) PERSONS MARRIED :—*Ratio per* 1,000.

Qrs. ended last day of	'81.	Mean '71-81.	'80.	'79.	'78.	'77.	'76.	'75.
March	11·8	13·4	12·9	11·5	12·7	13·0	13·7	14·3
June.....	15·5	16·5	14·3	14·7	15·6	15·9	16·9	16·2
September	14·8	15·8	14·7	14·1	14·8	15·3	16·0	16·4
December	—	19·2	17·6	17·0	17·7	18·6	19·5	20·0

(II.) BIRTHS:—*Ratio per* 1,000.

Qrs. ended last day of	'81.	Mean '71-81.	'80.	'79.	'78.	'77.	'76.	'75.
March	35·1	36·6	34·6	36·1	35·8	37·8	37·9	36·2
June.....	34·7	36·1	36·3	34·9	36·6	36·3	37·2	35·9
September	32·8	34·6	33·8	34·2	35·3	34·2	35·2	34·8
December	33·0	34·5	32·1	33·6	34·9	35·6	35·1	34·6

(III.) DEATHS:—*Ratio per* 1,000.

Qrs. ended last day of	'81.	Mean '71-81.	'80.	'79.	'78.	'77.	'76.	'75.
March	21·6	23·7	22·7	24·9	22·6	22·2	23·4	27·4
June.....	18·6	20·9	19·6	20·9	20·7	21·3	20·8	21·9
September	16·7	19·6	20·3	16·3	20·6	17·6	19·5	20·1
December	18·6	21·3	19·5	21·0	22·5	20·1	19·8	21·7

B.—*Comparative Table of* CONSOLS, PROVISIONS, COAL, *and* PAUPERISM *in each* QUARTER *of* **1879-80-81.**

Quarters ending	Average Prices of: Consols (for Money) per 100*l.* Stock.	Discount charged by the Bank of England.	Wheat per Quarter in England and Wales.	Meat per Pound at the Metropolitan Meat Market (by the Carcase), with the *Mean* Prices. Beef.	Meat per Pound at the Metropolitan Meat Market (by the Carcase), with the *Mean* Prices. Mutton.	Potatoes (Best Quality) per Ton at Waterside Market, Southwark.	Coal (Sea-borne) in the London Market per Ton.	Pauperism. Quarterly Average of the Number of Paupers Relieved on the *Last Day* of each Week. In-door.	Pauperism. Out-door.
1879	£	*s. d.*		*d. d. d.*	*d. d. d.*	*s. s. s.*	*s. d.*		
Mar. 31	96¼	3·38	39 –	3⅞—7¼ 5⅝	4½—8½ 6½	118—144 131	16 6	172,200	599,991
June 30	98½	2·05	41 2	4⅛—7¼ 5¾	4¾—9 6⅞	128—161 144	16 2	159,946	567,915
Sept. 30	97¾	2·00	47 2	4—7¾ 5⅞	4⅝—9 6⅞	182—233 207	14 10	157,113	548,755
Dec. 31	98	2·60	48 1	3¾—7¼ 5½	4½—7⅞ 6¼	136—160 148	15 10	173,099	565,644
1880									
Mar. 31	98	3·00	45 1	4—7⅝ 5⅞	4½—8¼ 6⅜	159—182 170	14 10	182,836	595,908
June 30	98⅞	2·93	46 1	4¼—8⅛ 6¼	5—9⅜ 7¼	153—170 161	14 5	168,661	555,196
Sept. 30	98	2·50	43 –	4¼—7¾ 6	4¾—8¾ 6¾	124—132 128	14 6	162,879	539,670
Dec. 31	99¼	2·62	43 1	4⅞—7¾ 6⅜	5¼—8¾ 7	99—112 105	16 1	177,442	543,239
1881									
Mar. 31	99⅛	3·19	42 3	4¾—7¼ 6	5—9 7	—	16 –	191,578	591,071
June 30	101⅝	2·65	44 6	4¼—7 5⅝	5—9¼ 7⅛	—	15 1	173,074	558,941
Sept. 30	100¼	3·14	48 10	4½—7¼ 5⅞	5¼—9 7⅛	—	15 8	164,567	538,057
Dec. 31	99⅝	4·93	45 10	4½—7½ 6	5—8⅞ 7	—	17 2	178,058	539,515

C.—*General Average Death-Rate Table:—Annual Rate of Mortality to* 1,000 *of the Population in the Eleven Divisions of England and Wales.*

Divisions.	Average Annual Rate of Mortality to 1,000 Living in: Ten Years. 1861-70.	Ten Years. 1871-80.	Year 1881.	1881. Quarters ending March.	June.	Sept.	Dec.
England and Wales	22·4	21·3	20·5	21·6	18·6	16·7	18·6
I. London	24·3	22·4	21·5	22·7	20·2	20·5	21·7
II. South-Eastern	19·1	17·6	17·6	18·6	15·6	14·3	15·4
III. South Midland	20·2	18·7	18·2	19·0	16·4	15·0	17·0
IV. Eastern	20·1	18·8	19·1	19·9	17·2	15·3	16·7
V. South-Western	19·9	19·3	19·1	21·6	18·5	13·6	16·2
VI. West Midland	21·8	20·9	19·4	20·7	17·6	15·5	17·9
VII. North Midland	20·8	20·3	20·0	20·5	17·8	17·3	17·2
VIII. North-Western	26·3	24·5	23·2	24·9	20·3	18·1	21·5
IX. Yorkshire	24·0	22·4	21·3	21·8	19·3	17·4	18·9
X. Northern	22·7	23·3	21·9	20·2	18·9	17·3	18·0
XI. Welsh	21·6	21·1	20·4	22·2	19·8	15·5	18·9

D.—*Special Average Death-Rate Table:*—ANNUAL RATE *of* MORTALITY *per* 1,000 *in* TOWN *and* COUNTRY DISTRICTS *of* ENGLAND *in each Quarter of the Years* **1881-79.**

	Area in Statute Acres.	Population Enumerated. 1881.	Quarters ending	Annual Rate of Mortality per 1,000 in each Quarter of the Years 1881.	Mean '71-80.	1880.	1879.
In 134 Districts, and 57 Sub-districts, comprising the *Chief Towns*	3,184,419	15,444,808	March ..	22·9	25·3	23·9	26·3
			June	19·4	22·0	20·4	21·3
			Sept.	18·5	21·7	22·3	17·3
			Dec.	20·5	23·5	20·7	23·5
			Year	20·3	23·1	21·8	22·1
In the remaining Districts and Sub-districts of England and Wales, comprising chiefly *Small Towns* and *Country Parishes*	34,134,802	10,523,478	Year	16·8	19·0	18·5	19·1
			March ..	19·6	21·7	21·0	23·2
			June	17·4	19·3	18·2	20·3
			Sept.	14·2	16·6	17·2	14·7
			Dec.	15·9	18·4	17·6	18·0

Note.—The three months January, February, March, contain 90, and in leap year 91 days; the three months April, May, June, 91 days; and each of the last two quarters of the year, 92 days. For this inequality a correction is made in calculating the rate of mortality in the different quarters of the year.

E.—*Special Town Table:*—POPULATION; BIRTH-RATE *and* DEATH-RATE *in each Quarter of* **1881**, *in* TWENTY-THREE *Large Towns.*

Cities, &c.	Estimated Population in the Middle of the Year 1881.	Annual Rate to 1,000 Living during the Thirteen Weeks ending 2nd April. (1st Quarter.)		2nd July. (2nd Quarter.)		1st October. (3rd Quarter.)		31st December. (4th Quarter.)	
		Births.	Deaths.	Births.	Deaths.	Births.	Deaths.	Births.	Deaths.
Total of 20 English towns	7,499,468	37·5	23·8	35·3	20·5	34·5	20·5	35·1	22·1
London	3,664,149	38·0	23·4	34·1	20·2	33·5	20·5	34·6	21·7
Brighton	107,321	30·4	21·1	29·9	16·6	29·5	17·1	32·2	21·2
Portsmouth	134,224	34·4	20·3	33·8	19·4	33·3	17·8	33·8	19·9
Norwich	85,827	38·0	23·7	33·4	18·7	31·0	17·5	32·8	18·4
Plymouth	74,993	32·0	25·2	35·2	18·3	31·9	16·0	29·5	18·6
Bristol	213,536	35·8	23·1	32·4	19·0	34·4	17·2	34·0	18·1
Wolverhampton	75,970	38·1	24·4	39·5	21·8	32·6	19·1	33·1	19·2
Birmingham	394,738	39·9	21·4	37·6	18·6	35·6	18·7	35·9	21·3
Leicester	129,912	38·3	19·5	39·5	18·4	36·9	26·5	35·4	21·1
Nottingham	173,627	39·7	25·1	36·2	19·3	36·6	23·4	36·2	23·1
Liverpool	544,056	40·0	29·3	36·9	24·3	37·0	25·3	36·8	28·0
Manchester	363,130	36·2	30·2	36·9	23·3	36·3	21·6	36·0	24·8
Salford	185,786	37·5	24·4	39·6	20·5	37·7	19·0	37·2	24·3
Oldham	115,413	33·1	27·3	37·0	22·0	35·5	17·8	33·8	22·3
Bradford	197,196	31·8	20·2	33·1	20·3	32·3	16·0	31·6	20·0
Leeds	318,929	38·0	24·1	36·7	20·1	35·1	20·3	35·3	20·5
Sheffield	304,938	35·1	21·2	38·7	22·4	37·0	18·6	37·9	19·9
Hull	149,627	38·7	22·3	36·0	18·1	34·6	26·2	37·0	28·9
Sunderland	116,730	39·8	23·0	40·3	19·8	36·9	20·2	39·9	20·4
Newcastle-on-Tyne	149,366	36·8	21·8	37·2	21·8	36·1	21·5	35·6	21·2
Edinburgh	229,839	30·7	22·3	33·2	21·1	31·2	17·0	32·9	19·9
Glasgow	589,598	31·9	27·3	40·6	25·0	36·1	26·8	35·4	23·3
Dublin	314,666	31·8	38·8	30·1	25·7	29·2	20·0	29·9	26·5

F.—*Divisional Table:*—MARRIAGES *in the Year ending* 30*th September; and* BIRTHS *and* DEATHS *in the Year ending* 31*st December,* **1881**, *as Registered Quarterly.*

1	2	3	4	5	6	7
DIVISIONS. (England and Wales.)	AREA* in Statute Acres.	Enumerated POPULATION, 1881 (Unrevised).	MARRIAGES in Quarters ending 31st December, 1880.	31st March, 1881.	30th June, 1881.	30th September, 1881.
ENGLD. & WALES....*Totals*	37,319,221	No. 25,968,286	No. 57,019	No. 37,914	No. 50,230	No. 48,732
I. London	75,362	3,814,571	9,781	6,335	8,883	9,338
II. South-Eastern	3,994,431	2,486,151	5,197	3,109	4,296	4,381
III. South Midland	3,201,325	1,596,041	3,136	1,663	2,499	2,492
IV. Eastern	3,211,441	1,324,923	3,239	1,512	2,011	1,969
V. South-Western	4,981,170	1,858,446	3,581	2,565	3,153	3,011
VI. West Midland	3,945,460	3,029,362	6,482	4,048	5,587	5,109
VII. North Midland	3,535,445	1,637,624	3,511	2,215	3,432	2,786
VIII. North-Western	1,998,914	4,107,155	8,845	6,981	8,632	8,649
IX. Yorkshire	3,702,384	2,894,527	6,415	4,489	5,428	5,353
X. Northern	3,547,947	1,624,468	3,437	2,808	3,400	3,079
XI. Monmthsh. & Wales	5,125,342	1,577,018	3,395	2,189	2,909	2,565

8	9	10	11	12	13	14	15	16
DIVISIONS. (England and Wales.)	BIRTHS in each Quarter of **1881** ending 31st March.	30th June.	30th September.	31st December.	DEATHS in each Quarter of **1881** ending 31st March.	30th June.	30th September.	31st December.
ENGLD. & WALES....*Totals*	No. 225,778	No. 225,467	No. 215,586	No. 216,677	No. 138,582	No. 120,825	No. 109,956	No. 122,450
I. London	35,080	32,538	32,003	33,053	21,636	19,252	19,521	20,662
II. South-Eastern	20,019	19,490	18,959	19,388	11,433	9,709	8,972	9,714
III. South Midland	13,031	13,199	12,395	12,625	7,486	6,542	6,050	6,845
IV. Eastern	11,235	11,158	10,733	10,992	6,608	5,789	5,181	5,682
V. South-Western	14,028	14,161	13,634	13,655	9,890	8,563	6,359	7,594
VI. West Midland	27,087	26,887	25,092	25,209	15,467	13,345	11,845	13,716
VII. North Midland	14,286	14,753	13,847	13,952	8,310	7,302	7,163	7,128
VIII. North-Western	37,477	37,476	36,589	35,901	25,334	20,841	18,838	22,323
IX. Yorkshire	25,734	25,616	24,271	24,802	15,638	13,981	12,739	13,878
X. Northern	15,097	16,028	15,093	14,581	8,142	7,678	7,105	7,386
XI. Monmthsh. & Wales	12,704	14,161	12,970	12,516	8,638	7,823	6,183	7,513

* These are revised figures, and will be found to differ somewhat from those first published.

G.—*General Meteorological Table,*

[Abstracted from the particulars supplied to the

1881. Months.	Temperature of Air. Mean.	Air. Diff. from Average of 110 Years.	Air. Diff. from Average of 40 Years.	Evaporation. Mean.	Evaporation. Diff. from Average of 40 Years.	Dew Point. Mean.	Dew Point. Diff. from Average of 40 Years.	Air—Daily Range. Mean.	Air—Daily Range. Diff. from Average of 40 Years.	Water of the Thames	Elastic Force of Vapour. Mean.	Elastic Force of Vapour. Diff. from Average of 40 Years.	Weight of Vapour in a Cubic Foot of Air. Mean.	Weight of Vapour in a Cubic Foot of Air. Diff. from Average of 40 Years.
	°	°	°	°	°	°	°	°	°		In.	In.	Grs.	Gr.
Jan.	31·6	−4·9	−6·8	30·6	−6·4	28·0	−6·9	8·8	−0·8	—	·153	−·047	1·8	−0·5
Feb.	37·7	−0·9	−1·8	36·3	−1·4	34·4	−0·8	9·0	−2·2	—	·199	−·009	2·3	−0·1
Mar.	42·6	+1·5	+0·9	39·9	+0·6	36·6	+0·5	15·6	+1·0	—	·217	+·002	2·5	0·0
Means	37·3	−1·4	−2·6	35·6	−2·4	33·0	−2·4	11·1	−0·7	—	·170	−·018	2·2	−0·2
April	45·9	−0·2	−1·2	42·2	−1·8	37·9	−2·6	18·1	−0·3	—	·230	−·023	2·6	−0·3
May	54·1	+1·6	+1·5	49·4	+0·6	44·7	−0·3	22·5	+2·1	—	·296	−·002	3·4	0·0
June	58·7	+0·5	−0·2	53·9	−0·7	49·6	−1·1	20·3	−0·7	—	·356	−·015	4·0	−0·1
Means	52·9	+0·6	0·0	48·5	−0·6	44·1	−1·3	20·3	+0·4	—	·294	−·013	3·3	−0·1
July	65·4	+3·8	+3·3	59·7	+2·0	55·0	+1·0	22·8	+1·8	—	·444	+·026	4·8	+0·1
Aug.	59·1	−1·8	−2·4	56·5	−1·0	54·2	+0·2	18·2	−1·5	—	·421	+·001	4·7	+0·1
Sept.	55·4	−1·2	−1·8	53·8	−0·2	52·3	+1·2	15·8	−2·6	—	·393	+·013	4·4	+0·1
Means	60·0	+0·3	−0·3	57·0	+0·3	53·8	+0·8	18·9	−0·8	—	·419	+·013	4·6	+0·1
Oct.	45·3	−3·5	−4·8	43·5	−4·6	41·3	−4·6	13·4	−1·8	—	·261	−·025	3·0	−0·6
Nov.	48·7	+6·4	+5·3	47·0	+5·8	45·1	+5·8	11·2	−0·3	—	·301	+·057	3·4	+0·6
Dec.	39·8	+0·8	−0·1	38·4	−0·1	36·6	0·0	9·0	−0·4	—	·217	−·002	2·5	−0·1
Means	44·6	+1·2	+0·1	43·0	+0·4	41·0	+0·4	11·2	−0·7	—	·260	+·001	3·0	0·0

Note.—In reading this table it will be borne in mind that the sign (−) minus signifies

The mean temperature of the air for October was 45°·3, being 3°·5 and 4°·8 below the average of 110 years and 40 years respectively; it was 0°·9 and 3°·8 lower than in 1880 and 1879 respectively.

Back to 1771 there have been but five Octobers so cold as this, viz.:—

In 1782 the mean temperature was 45°·2; in 1784, 43°·9; in 1786, 44°·7; in 1817, 45°·0; in 1842, 45°·4; in 1881, 45°·3.

The mean temperature of the air for November was 48°·7, being 6°·4 and 5°·3 above the average of 110 years and 40 years respectively; it was 6°·2 and 10°·4 higher than in 1880 and 1879 respectively.

Back to the year 1771 there have been but three Novembers whose mean temperature exceeded 48°, the instances are:—

1818, when it was 49°·2; 1822, 48°·2; 1852, 48°·9; 1881, 48°·7.

for the Year ended 31st December, **1881.**

Registrar-General by JAMES GLAISHER, ESQ., F.R.S., &c.]

Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Daily Horizontal Movement of the Air.	Reading of Thermometer on Grass.					1881. Months.
									Number of Nights it was			Lowest Reading at Night.	Highest Reading at Night.	
Mean.	Diff. from Average of 40 Years.	Mean.	Diff. from Average of 40 Years.	Mean.	Diff. from Average of 40 Years.	Amnt.	Diff. from Average of 66 Years.		At or below 30°.	Between 30° and 40°.	Above 40°.			
		In.	In.	Grs.	Grs.	In.	In.	Miles.				°	°	
86	− 1	29·710	− ·056	561	+ 7	1·16	−0·74	256	27	4	0	10·2	38·0	January
88	+ 3	29·661	− ·125	553	0	2·43	+0·87	311	17	9	2	23·2	44·0	Feb.
78	− 4	29·728	− ·019	549	− 1	1·84	+0·29	336	16	12	3	20·1	47·2	March
84	− 1	29·700	− ·067	554	+ 2	Sum 5·43	Sum +0·42	Mean 301	Sum 60	Sum 25	Sum 5	Lowest 10·2	Highst 47·2	Means
74	− 5	29·772	+ ·016	546	+ 3	0·62	−1·04	357	14	10	6	24·3	43·1	April
71	− 5	29·929	+ ·143	540	− 1	1·62	−0·46	286	6	14	11	21·9	55·3	May
72	− 2	29·806	·000	532	0	1·86	−0·14	230	0	8	22	33·1	54·0	June
72	− 4	29·836	+ ·053	539	+ 1	Sum 4·10	Sum −1·64	Mean 291	Sum 20	Sum 32	Sum 39	Lowest 21·9	Highst 55·3	Means
69	− 6	29·825	+ ·027	525	− 3	2·13	−0·44	249	0	1	30	36·8	58·1	July
80	+ 3	29·676	− ·108	531	+ 3	3·88	+1·45	302	0	3	28	37·1	53·8	August
89	+ 8	29·801	− ·004	535	+ 3	2·18	−0·26	186	1	9	28	31·7	52·0	Sept.
79	+ 2	29·767	− ·028	530	+ 1	Sum 8·19	Sum +0·75	Mean 246	Sum 1	Sum 13	Sum 78	Lowest 31·7	Highst 58·1	Means
86	− 1	29·827	+ ·121	547	+ 8	2·70	−0·11	306	11	13	7	19·6	47·3	October
88	0	29·785	+ ·037	542	− 6	2·27	−0·07	361	5	16	9	22·1	47·8	Nov.
89	+ 1	29·821	+ ·027	553	+ 1	2·55	+0·56	279	19	12	0	17·2	39·5	Dec.
88	0	29·811	+ ·062	547	0	Sum 7·52	Sum +0·38	Mean 321	Sum 35	Sum 41	Sum 16	Lowest 17·2	Highst 47·8	Means

below the average, and that the sign (+) plus signifies above the average.

The mean temperature of the air for December was 39°·8, being 0°·8 above the average, and 0°·1 below the average of 110 years and 40 years respectively; it was 3°·4 lower than in 1880, and 7°·4 higher than in 1879.

The mean high day temperature of the air in October was 52°·4, being 5°·8 below the average of 40 years; in November it was 54°·0, being 5°·3 higher than the average, and in December was 43°·9, being 0°·8 below the average.

The mean low night temperature of the air in October was 39°·0, being 4°·5 below the average of 40 years; in November it was 42°·8, being 5°·6 above the average, and in December was 34°·9, being 0°·3 below the average; therefore both the days and nights were cold in October and December, and were very warm in November.

No. II.—SCOTLAND.

BIRTHS, DEATHS, AND MARRIAGES, IN THE YEAR ENDED 31ST DECEMBER, 1881.

I.—*Serial Table:—Number of* BIRTHS, DEATHS, *and* MARRIAGES *in Scotland, and their Proportion to the Population estimated to the Middle of each Year, during each Quarter of the Years* **1881-77** *inclusive.*

	1881.		1880.		1879.		1878.		1877.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1st Quarter—										
Births	30,860	3·33	31,319	3·42	31,268	3·45	31,226	3·48	31,256	3·51
Deaths	21,284	2·30	20,751	2·27	21,950	2·42	20,320	2·26	20,525	2·81
Marriages	6,483	0·70	6,006	0·66	5,828	0·64	6,068	0·68	5,977	0·67
Mean Temperature	33°·2		39°·9		34°·2		39°·9		38°·5	
2nd Quarter—										
Births	33,351	3·56	33,827	3·70	32,968	3·64	33,629	3·74	33,355	3·75
Deaths	17,889	1·91	19,711	2·15	18,784	2·04	19,514	2·17	19,586	2·20
Marriages	6,208	0·66	6,224	0·66	6,050	0·67	6,095	0·68	6,735	0·76
Mean Temperature	48°·5		49°·5		46°·8		50°·4		47°·5	
3rd Quarter—										
Births	31,158	3·33	30,179	3·30	31,436	3·47	31,236	3·48	30,988	3·45
Deaths	15,602	1·67	17,047	1·86	15,115	1·67	17,344	1·93	15,919	1·79
Marriages	5,787	0·62	5,500	0·60	5,061	0·56	5,508	0·61	5,694	0·64
Mean Temperature	54°·2		57°·1		54°·1		57°·5		54°·0	
4th Quarter—										
Births	30,845	3·29	29,327	3·20	30,064	3·32	30,616	3·41	31,225	3·51
Deaths	17,526	1·87	18,286	2·00	17,480	1·93	19,597	2·18	17,916	2·01
Marriages	7,470	0·80	6,759	0·74	6,523	0·72	6,662	0·74	7,384	0·83
Mean Temperature	42°·7		39°·2		40°·4		39°·2		42°·8	
Year—										
Population	3,744,685		3,661,292		3,627,453		3,593,929		3,560,715	
Births	126,214	3·37	124,652	3·40	125,736	3·46	126,707	3·53	126,824	3·56
Deaths	72,301	1·93	75,795	2·07	73,329	2·02	76,775	2·14	73,946	2·08
Marriages	25,948	0·69	24,489	0·67	23,462	0·65	24,333	0·68	25,790	0·72

II.—*Special Average Table:—Number of Births, Deaths, and Marriages in Scotland and in the Town and Country Districts for each Quarter of the Year ending* 31*st December*, **1881**, *and their Proportion to the Population; also the Number of Illegitimate Births, and their Proportion to the Total Births.*

Registration Groups of Districts.	Total Births.			Illegitimate Births.			Deaths.			Marriages.		
	Number.	Per Cent.	Ratio. One in every	Number	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every	Number.	Per Cent.	Ratio. One in every
1st Quarter—												
Scotland	30,860	3·33	30	2,618	8·5	11·8	21,284	2·30	43	6,483	0·70	142
Principal towns	10,400	3·16	33	846	8·1	12·0	8,222	2·49	40	2,666	0·81	124
Large ,,	4,068	4·21	24	257	6·3	15·8	2,790	2·89	35	913	0·92	106
Small ,,	7,510	3·65	27	568	7·6	13·2	4,684	2·28	44	1,438	0·70	143
Mainland rural	8,099	3·11	32	891	11·0	9·1	4,985	1·91	52	1,257	0·48	207
Insular ,,	783	2·37	41	56	7·2	13·9	603	1·89	53	209	0·63	152
2nd Quarter—												
Scotland	33,351	3·56	28	2,625	7·9	12·7	17,889	1·91	52·3	6,208	0·66	151
Principal towns	11,476	3·81	26	951	8·3	12·1	6,740	2·24	44·8	2,486	0·82	121
Large ,,	4,419	3·90	26	285	6·4	15·5	2,305	2·04	49·1	827	0·73	137
Small ,,	8,070	3·69	27	561	7·0	14·4	3,984	1·82	54·9	1,312	0·60	167
Mainland rural	8,640	3·20	31	787	9·1	11·0	4,353	1·61	62·0	1,507	0·56	179
Insular ,,	746	2·29	44	41	5·5	18·2	507	1·56	64·0	76	0·23	429
3rd Quarter—												
Scotland	31,158	3·33	30	2,652	8·5	11·8	15,602	1·67	59·9	5,787	0·62	161
Principal towns	10,592	3·51	28	887	8·4	11·9	5,713	1·89	52·9	2,552	0·85	117
Large ,,	4,035	3·56	28	260	6·4	15·5	2,112	1·87	53·4	860	0·76	132
Small ,,	7,498	3·43	29	630	8·4	11·9	3,568	1·63	61·3	1,266	0·58	172
Mainland rural	8,157	3·02	33	827	10·1	9·9	3,758	1·39	71·9	1,048	0·39	256
Insular ,,	876	2·69	37	48	5·5	18·2	451	1·38	72·4	61	0·19	526
4th Quarter—												
Scotland	30,845	3·29	30	2,571	8·3	12·0	17,526	1·87	53	7,470	0·80	125
Principal towns	10,441	3·46	29	813	7·8	12·8	6,568	2·18	46	2,792	0·93	108
Large ,,	4,052	3·58	28	261	6·4	15·5	2,334	2·06	48	894	0·79	127
Small ,,	7,292	3·33	30	578	7·9	12·6	4,180	1·91	52	1,703	0·78	129
Mainland rural	8,180	3·03	33	860	10·5	9·5	3,986	1·48	68	1,924	0·71	140
Insular ,,	880	2·70	37	59	6·7	14·9	458	1·41	71	157	0·48	208

Population of Scotland.

Population.	Scotland.	Principal Towns.	Large Towns.	Small Towns.	Mainland Rural.	Insular Rural.
By Census of 1881	3,734,447	1,202,708	449,250	872,969	1,079,145	130,375
Estimated to the middle of 1881	3,744,685	1,206,057	452,821	875,614	1,079,860	130,333

III.—*Bastardy Table:—Proportion of* ILLEGITIMATE *in every Hundred* BIRTHS *in the Divisions and Counties of* SCOTLAND, *during each quarter of the Year ending 31st December,* **1881**; *with the Corresponding Figures for* **1880** *added for Comparison.*

Divisions and Counties.	Per Cent. for the Quarters ending 1881.				Per Cent. for the Quarters ending 1880.			
	31st March.	30th June.	30th Sept.	31st Dec.	31st March.	30th June.	30th Sept.	31st Dec.
SCOTLAND	8·5	7·9	8·51	8·3	8·6	8·3	8·03	8·7
Divisions—								
Northern	10·0	6·6	6·6	6·8	8·5	6·8	8·4	6·6
North-Western	7·0	6·5	5·2	6·3	5·7	6·5	6·3	7·4
North-Eastern	14·0	11·8	14·6	14·8	15·3	13·9	13·1	16·0
East Midland	8·4	9·2	9·4	7·6	9·0	8·9	9·0	8·7
West Midland	7·3	6·2	6·5	6·4	7·1	5·2	5·9	6·5
South-Western	6·8	6·5	7·1	7·1	7·1	6·8	6·4	7·0
South-Eastern	7·8	7·7	7·3	7·6	7·3	7·5	7·3	7·8
Southern	14·9	11·5	13·7	12·8	13·9	14·9	13·6	14·4
Counties—								
Shetland	4·8	4·9	4·9	4·8	6·4	4·3	4·9	6·3
Orkney	5·6	5·0	3·7	5·4	11·0	4·8	4·7	7·6
Caithness	14·7	9·7	9·1	10·0	10·2	10·9	13·9	10·4
Sutherland	11·8	3·7	7·9	5·8	3·8	5·6	6·4	5·3
Ross and Cromarty	4·2	4·7	3·3	4·8	4·5	5·9	4·0	5·1
Inverness	9·8	8·0	7·1	7·9	6·8	6·8	8·6	9·3
Nairn	16·7	9·9	15·0	7·3	10·9	6·8	13·0	9·3
Elgin	18·3	11·6	15·0	18·8	19·1	13·8	13·8	21·1
Banff	15·0	14·1	18·8	15·6	15·4	17·0	14·8	15·4
Aberdeen	13·0	11·5	13·8	14·2	15·2	13·7	12·4	16·2
Kincardine	14·4	11·2	13·3	14·7	11·9	11·5	14·9	10·0
Forfar	9·8	10·6	10·9	8·3	10·5	9·0	10·4	9·7
Perth	7·5	7·9	10·1	8·3	9·6	8·9	10·8	9·7
Fife	6·8	6·9	6·8	6·1	6·5	8·0	6·0	6·3
Kinross	8·3	11·8	12·0	9·8	4·5	15·6	10·0	8·7
Clackmannan	8·2	15·1	5·0	7·6	7·7	9·8	5·4	9·7
Stirling	7·8	6·7	5·6	6·4	8·3	5·8	6·3	6·7
Dumbarton	4·0	4·2	6·7	5·8	3·7	5·7	5·3	4·7
Argyll	9·1	7·7	7·8	7·3	9·1	6·2	6·6	8·8
Bute	15·0	5·9	5·6	6·0	6·7	9·4	3·5	5·5
Renfrew	4·7	6·0	6·2	5·8	6·4	6·7	5·5	6·0
Ayr	7·7	7·6	7·7	8·3	8·1	6·2	8·1	9·5
Lanark	7·1	6·4	7·2	7·2	7·0	6·9	6·2	6·6
Linlithgow	7·9	7·7	7·9	6·6	7·6	8·8	7·8	15·3
Edinburgh	7·3	8·0	7·1	7·6	7·0	7·0	6·9	8·3
Haddington	9·3	5·9	7·9	6·6	6·7	9·0	4·3	3·8
Berwick	13·7	7·6	10·0	11·8	10·5	7·9	10·4	11·0
Peebles	11·6	9·3	5·0	6·6	7·4	11·9	13·1	15·8
Selkirk	4·4	5·2	7·1	7·3	8·1	9·0	9·4	15·4
Roxburgh	11·4	8·2	10·0	11·4	12·0	11·1	9·2	11·7
Dumfries	16·5	14·4	14·4	14·1	13·8	15·3	12·4	13·5
Kirkcudbright	14·9	11·1	13·8	8·5	15·0	16·6	17·4	14·4
Wigtown	16·8	10·2	17·4	17·0	15·8	17·4	18·1	19·6

IV.—*Divisional Table:*—MARRIAGES, BIRTHS, *and* DEATHS *Registered in the Year ended 31st December,* **1881.**

(Compiled from the Registrar-General's Quarterly Returns.)

1 DIVISIONS. (Scotland)	2 AREA in Statute Acres.	3 POPULATION, 1881. (*Persons.*)	4 Marriages.	5 Births.	6 Deaths.
		No.	No.	No.	No.
SCOTLAND ..... *Totals*	19,639,377	3,734,447	25,948	72,301	126,214
I. Northern	2,261,622	123,957	552	3,043	2,006
II. North-Western.....	4,739,876	165,810	743	4,406	2,578
III. North-Eastern	2,429,594	418,186	2,493	13,594	6,532
IV. East Midland	2,790,492	602,440	3,948	18,912	10,804
V. West Midland	2,693,176	283,433	1,615	9,176	5,080
VI. South-Western.....	1,462,397	1,385,032	11,406	52,371	30,881
VII. South-Eastern	1,192,524	546,115	3,958	18,294	10,768
VIII. Southern	2,069,696	209,474	1,233	6,418	3,652

No. III.—GREAT BRITAIN AND IRELAND.

SUMMARY *of* MARRIAGES, *in the Year ended 30th September,* **1881**; *and of* BIRTHS *and* DEATHS, *in the Year ended 31st December,* **1881.**

(Compiled from the Quarterly Returns of the respective Registrars-General.)

COUNTRIES.	[000's omitted.] Area in Statute Acres.	[000's omitted.] Population, 1881.* (*Persons.*)	Marriages.	Per 1,000 of Population.	Births.	Per 1,000 of Population.	Deaths.	Per 1,000 of Population.
		No.	No.	Ratio.	No.	Ratio.	No.	Ratio.
England and Wales	37,319,	25,968,	193,692	7·4	883,518	34·0	491,813	18·9
Scotland	19,639,	3,734,	25,237	6·8	126,214	33·7	72,301	19·3
Ireland	20,323,	5,160,	21,732	4·2	125,840	24·3	90,085	17·4
GREAT BRITAIN AND IRELAND	77,281,	34,862,	240,661	6·9	1,135,572	32·5	654,199	18·7

* By preliminary Report of Census of 1881, and therefore subject to revision.

Note.—The numbers against Ireland represent the marriages, births, and deaths that the local registrars have *succeeded* in recording; but how far the registration approximates to absolute completeness, does not at present appear to be known. It will be seen that the Irish ratios of marriages, births, and deaths are much under those of England and Scotland.—ED. *S. J.*

Trade of United Kingdom, for the Years 1880-76.—*Declared Value of the Total Exports of* **Foreign** *and* **Colonial** *Produce and Manufactures to each Foreign Country and British Possession.*

Merchandise Exported to the following Foreign Countries, &c.	[000's omitted.] 1880.	1879.	1878.	1877.	1876.
I.—Foreign Countries.	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark, & Iceland, & Heligoland	5,416,	4,742,	4,799,	4,587,	4,951,
Central Europe; viz., Germany, Holland and Belgium	25,732,	23,913,	20,715,	22,182,	23,543,
Western Europe; viz., France, Portugal, (with Azores, Madeira, &c.), and Spain, (with Gibraltar and Canaries)	13,895,	13,061,	12,973,	12,789,	14,343,
Southern Europe; viz., Italy, Austrian Empire, Greece, Ionian Islands, and Malta	1,418,	1,616,	1,766,	1,773,	2,066,
Levant; viz., Turkey, Roumania,* Syria and Palestine, and Egypt	675,	662,	737,	474,	593,
Northern Africa; viz., Tripoli, Tunis, Algeria, and Morocco	62,	74,	178,	77,	76,
Western Africa	219,	221,	257,	299,	270,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	—	—	—	—	—
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	851,	29,	328,	307,	183,
South Sea Islands	—	—	—	—	—
China, including **Hong Kong** and Japan	1,163,	1,030,	382,	344,	290,
United States of America	7,098,	5,197,	2,980,	3,509,	3,393,
Mexico and Central America	80,	98,	121,	119,	97,
Foreign West Indies and Hayti	15,	686,	689,	497,	595,
South America (Northern), New Granada, Venezuela and Ecuador	58,	37,	37,	33,	41,
„ **(Pacific)**, Peru, Bolivia, Chili, and Patagonia	313,	260,	323,	264,	297,
„ **(Atlantic)**, Brazil, Uruguay, and Argentine Confed.	358,	420,	755,	593,	406,
Other countries (unenumerated)	159,	108,	109,	150,	136,
Total—Foreign Countries	57,512,	52,172,	47,329,	47,997,	51,280,
II.—British Possessions:					
British India, Ceylon, and Singapore	1,627,	1,540,	1,536,	1,475,	1,433,
Austral. Cols.—New South Wales and Victoria, So. Aus., W. Aus., Tasm., and N. Zealand	1,817,	1,689,	1,952,	2,218,	1,788,
British North America	807,	674,	597,	642,	668,
„ W.Indies with Btsh.Guiana & Honduras	407,	291,	306,	328,	347,
Cape and Natal	576,	517,	546,	387,	315,
Brt. W. Co. of Af., Ascension and St. Helena	101,	102,	99,	82,	84,
Mauritius	28,	25,	22,	106,	22,
Channel Islands	232,	214,	198,	184,	170,
Other possessions	247,	27,	50,	34,	30,
Total—British Possessions	5,842,	5,080,	5,306,	5,456,	4,857,
General Total £	63,354,	57,272,	52,635,	53,453,	56,137,

* Wallachia and Moldavia to 1878, and Roumania in 1879.

Trade of United Kingdom, 1881-80-79.—*Distribution of* **Exports*** *from United Kingdom, according to their Declared Real Value; and the Declared Real Value (Ex-duty) of* **Imports** *at Port of Entry, and therefore including Freight and Importer's Profit.*

[000's omitted.]

Merchandise (*excluding Gold and Silver*) Imported from, and Exported to, the following Foreign Countries, &c.	1881.		1880.		1879.	
	Imports from	*Exports to*	Imports from	*Exports to*	Imports from	*Exports to*
I.—Foreign Countries:	£	£	£	£	£	£
Northern Europe; viz., Russia, Sweden, Norway, Denmark & Iceland, & Heligoland	27,700,	11,566,	32,289,	13,044,	28,916,	11,814,
Central Europe; viz., Germany, Holland, and Belgium	57,916,	33,275,	61,513,	31,841,	54,362,	33,078,
Western Europe; viz., France, Portugal (with Azores, Madeira, &c.), and Spain (with Gibraltar and Canaries)	53,963,	23,812,	57,032,	21,936,	50,589,	20,804,
Southern Europe; viz., Italy, Austrian Empire, Greece, Roumania, and Malta	9,860,	10,887,	7,963,	8,791,	8,306,	8,522,
Levant; viz., Turkey, Asiatic and European (including Cyprus), and Egypt	13,299,	10,059,	12,927,	9,827	12,267,	9,325,
Northern Africa; viz., Tripoli, Tunis, Algeria and Morocco	1,527,	646,	1,589,	607,	1,035,	502,
Western Africa	1,583,	1,125,	1,896,	991,	1,436,	836,
Eastern Africa; with African Ports on Red Sea, Aden, Arabia, Persia, Bourbon, and Kooria Mooria Islands	728,	605,	714,	629,	454,	1,066,
Indian Seas, Siam, Sumatra, Java, Philippines; other Islands	5,057,	3,263,	4,384,	3,075,	3,320,	2,297,
South Sea Islands	43,	130,	122,	84,	167,	168,
China and Japan, including Hong Kong	12,426,	12,421,	13,585,	12,138,	12,844,	10,238,
United States of America	102,880,	29,788,	106,947,	30,877,	90,896,	20,595,
Mexico and Central America	1,913,	2,543,	1,942,	1,881,	1,965,	1,407,
Foreign West Indies, Hayti, &c.	1,787,	3,140,	2,129,	2,637,	3,294,	2,525,
South America (Northern), New Granada, Venezuela, and Ecuador	1,891,	1,921,	1,685,	1,825,	1,562,	1,624,
„ (Pacific), Peru, Bolivia, Chili, and Patagonia	5,222,	3,426,	6,409,	2,313,	7,379,	1,749,
„ (Atlantic) Brazil, Uruguay, and Argentine Republic	7,348,	11,391,	6,869,	10,497,	5,974,	8,661,
Whale Fisheries; Grnlnd., Davis' Straits, Southn. Whale Fishery, & Falkland Islands	165,	24,	216,	25,	153,	12,
Total—Foreign Countries	305,308,	160,022,	320,211,	153,018,	284,919,	135,223,
II.—British Possessions:						
British India, Ceylon, and Singapore	38,603,	32,632,	37,371,	33,722,	31,024,	24,201,
Austral. Cols.—N. So. W., Victoria & Queensld.	17,860,	14,806,	15,934,	11,149,	13,638,	10,080,
„ „ So. Aus., W. Aus., Tasm., N. Zealand, & Fiji Islands	9,130,	6,530,	9,731,	5,797,	8,291,	6,178,
British North America	11,226,	8,406,	13,214,	7,698,	10,569,	5,555,
„ W. Indies with Btsh. Guiana & Honduras	5,907,	2,723,	6,750,	3,042,	7,303,	2,812,
Cape and Natal	5,406,	7,071,	5,643,	6,629,	4,570,	5,844,
Brt. W. Co. of Af., Ascension and St. Helena	520,	663,	804,	819,	586,	767,
Mauritius	450,	443,	288,	358,	642,	345,
Channel Islands	757,	643,	817,	585,	738,	599,
Total—British Possessions	89,859,	73,917,	90,560,	69,783,	77,361,	56,281,
General Total £	395,167,	233,939,	410,771,	222,810,	362,280,	191,504,

* *i.e.*, British and Irish produce and manufactures.

IMPORTS.—(United Kingdom.)—**For the Years 1881-80-79-78-77.**—*Declared Real Value (Ex-duty), at Port of Entry (and therefore including Freight and Importer's Profit), of Articles of Foreign and Colonial Merchandise Imported into the United Kingdom.*

[000's omitted.]

Foreign Articles Imported.		1881.	1880.	1879.	1878.	1877.
		£	£	£	£	£
Raw Matls.—*Textile*, &c.	Cotton, Raw ...	43,502,	42,765,	36,279,	33,524,	35,489,
	Wool	27,499,	28,356,	24,930,	24,589,	26,310,
	Silk*	15,066,	17,461,	16,825,	16,867,	17,733,
	Flax	3,398,	4,070,	3,581,	3,483,	5,055,
	Hemp and Jute	6,159,	5,894,	4,943,	5,156,	4,973,
	Indigo	2,346,	1,698,	1,901,	1,583,	1,636,
		97,970,	100,244,	88,459,	85,202,	91,196,
„ „	*Various.* Hides	6,355,	6,911,	5,109,	6,266,	6,495,
	Oils	3,359,	3,418,	3,477,	3,184,	4,200,
	Metals	12,448,	15,794,	10,619,	10,632,	11,569,
	Tallow	2,102,	2,310,	2,100,	1,811,	2,570,
	Timber.....	14,957,	16,583,	10,726,	13,915,	20,191,
		39,221,	46,016,	32,031,	35,808,	45,025,
„ „	*Agricltl.* Guano	489,	805,	704,	1,805,	1,667,
	Seeds	7,563,	7,597,	7,098,	8,690,	9,139,
		8,052,	8,402,	7,802,	10,495,	10,806,
Tropical, &c., Produce.	Tea	11,345,	11,752,	11,373,	13,097,	12,482,
	Coffee and Chich.	5,267,	7,062,	7,324,	6,093,	7,852,
	Sugar & Molasses	24,404,	22,970,	22,351,	21,107,	27,277,
	Tobacco	2,623,	2,901,	1,975,	3,718,	3,539,
	Rice	3,666,	3,750,	3,481,	3,192,	3,507,
	Fruits	4,125,	3,288,	3,794,	3,509,	4,334,
	Wines	5,660,	6,483,	5,380,	6,003,	7,156,
	Spirits	1,676,	1,979,	2,895,	2,209,	2,256,
		58,766,	60,185,	58,573,	58,928,	68,403,
Food	Grain and Meal.	60,557,	62,369,	60,596,	58,373,	63,210,
	Provisions	41,296,	43,438,	35,901,	35,951,	33,241,
		101,853,	105,807,	96,497,	94,324,	96,451,
Remainder of Enumerated Articles		47,694,	48,582,	41,955,	43,253,	42,560,
Total Enumerated Imports		353,556,	368,240,	325,317,	328,010,	354,441,
Add for Unenumerated Imports (say)		42,100,	41,750,	36,810,	38,050,	39,500,
Total Imports		395,656,	409,990,	362,127,	366,060,	393,941,

* "Silk," inclusive of manufactured silk, "not made up."

EXPORTS.—(United Kingdom.)—**For the Years 1881-80-79-78-77.**—*Declared Real Value, at Port of Shipment, of Articles of* British *and* Irish *Produce and Manufactures Exported from the United Kingdom.*

[000's omitted.]

British Produce, &c., Exported.		1881.	1880.	1879.	1878.	1877.
		£	£	£	£	£
Manfrs.—*Textile.*	Cotton Manufactures..	65,923,	63,657,	51,843,	52,903,	56,954,
	,, Yarn	13,167,	11,906,	12,103,	13,006,	12,209,
	Woollen Manufactures	18,122,	17,270,	15,851,	16,723,	17,335,
	,, Yarn	3,224,	3,344,	3,714,	3,910,	3,609,
	Silk Manufactures.....	2,565,	2,029,	1,696,	1,921,	1,707,
	,, Yarn	1,009,	685,	694,	564,	572,
	Linen Manufactures	5,844,	5,826,	5,474,	5,526,	5,830,
	,, Yarn	1,057,	978,	1,075,	1,213,	1,291,
		110,911,	105,695,	92,450,	95,766,	99,507,
,, *Sewed.*	Apparel	3,710,	3,194,	3,198,	3,155,	2,833,
	Haberdy. and Mllnry.	4,190,	3,869,	3,487,	3,966,	3,803,
		7,900,	7,063,	6,685,	7,121,	6,636,
Metals, &c.	Hardware	3,859,	3,512,	3,019,	3,290,	3,336,
	Machinery	9,944,	9,262,	7,283,	7,490,	6,683,
	Iron	27,576,	28,307,	19,439,	18,394,	20,095,
	Copper and Brass.....	3,823,	3,638,	3,380,	3,522,	3,503,
	Lead and Tin	1,139,	984,	1,019,	1,057,	1,363,
	Coals and Culm	8,794,	8,379,	7,202,	7,321,	7,829,
		55,135,	54,082,	41,342,	41,074,	42,809,
Ceramic Manufcts.	Earthenware and Glass	3,059,	2,896,	2,526,	2,450,	2,614,
Indigenous Mnfrs. and Products.	Beer and Ale.....	1,725,	1,730,	1,759,	1,762,	1,895,
	Butter	205,	201,	235,	243,	247,
	Cheese	51,	51,	55,	66,	72,
	Candles	138,	143,	136,	170,	196,
	Salt.....	587,	604,	552,	503,	463,
	Spirits	769,	532,	454,	390,	373,
	Soda	—	—	—	—	—
		3,475,	3,261,	3,191,	3,134,	3,246,
Various Manufcts.	Books, Printed	1,101,	971,	953,	891,	896,
	Furniture	—	—	—	—	—
	Leather Manufactures	2,461,	2,096,	2,058,	2,003,	1,995,
	Soap	397,	443,	433,	405,	365,
	Plate and Watches	285,	233,	213,	221,	218,
	Stationery	796,	723,	664,	647,	655,
		5,040,	4,466,	4,321,	4,167,	4,129,
Remainder of Enumerated Articles		25,563,	24,843,	22,936,	20,953,	22,509,
Unenumerated Articles.....		22,856,	20,505,	18,053,	18,139,	17,281,
Total Exports.....		233,939,	222,811,	191,504,	192,804,	198,731,

SHIPPING.—(United Kingdom.)—*Account of Tonnage of Vessels Entered and Cleared with Cargoes, from and to Various Countries, during the* **Years** *ended December*, **1881-80-79.**

Countries from whence Entered and to which Cleared.	Total British and Foreign.					
	1881.		1880.		1879.	
	Entered.	Cleared.	Entered.	Cleared.	Entered.	Cleared.
FOREIGN COUNTRIES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Russia { Northern ports	1,200,111	1,067,482	1,465,788	1,211,278	1,161,245	1,066,649
Russia { Southern „	199,790	196,252	189,468	220,892	284,747	151,107
Sweden	1,161,035	793,600	1,318,864	797,262	1,143,643	632,399
Norway	862,559	524,111	854,028	484,508	665,398	442,179
Denmark	255,018	753,094	287,497	705,505	239,776	640,744
Germany	1,697,706	2,476,010	1,744,670	2,583,823	1,653,266	2,361,798
Holland	1,355,811	1,401,750	1,266,361	1,393,723	1,250,035	1,360,310
Belgium	957,530	983,520	931,278	980,183	828,024	872,170
France	1,966,635	3,525,879	1,988,202	3,502,433	1,843,596	3,230,265
Spain	1,869,910	840,146	1,942,041	790,114	1,106,416	723,797
Portugal	209,713	345,044	241,170	357,678	183,603	351,700
Italy	296,496	1,241,050	317,865	1,152,848	252,477	1,029,891
Austrian territories	36,451	66,440	32,832	81,285	38,767	80,296
Greece	71,761	94,571	57,731	78,470	76,522	76,749
Roumania	200,735	60,628	97,976	38,174	79,726	23,751
Turkey	196,191	245,369	159,200	264,458	162,443	264,453
Egypt	281,010	641,123	317,554	502,688	281,056	430,888
United States of America	5,034,323	3,796,786	5,266,642	3,727,189	4,980,953	3,038,411
Mexico, Foreign West Indies, and Central America	185,723	462,111	214,274	483,873	318,179	464,474
Brazil	251,718	521,584	218,493	470,695	209,025	467,276
Peru	62,367	50,169	92,639	38,020	113,543	79,680
Chili	117,921	302,595	126,574	210,530	127,832	156,702
China	152,059	23,345	180,816	24,570	138,513	13,411
Other countries	748,246	919,643	702,648	815,259	608,057	711,177
Total, Foreign Countries	19,370,819	21,332,302	20,014,611	20,915,458	17,746,842	18,670,277
BRITISH POSSESSIONS.						
North American Colonies	1,364,928	769,899	1,629,414	900,859	1,249,901	715,169
East Indies, including Ceylon, Singapore, and Mauritius	1,249,255	1,819,864	1,124,239	1,809,578	949,453	1,530,654
Australia and New Zealand	466,165	749,959	477,909	600,453	357,339	549,402
West Indies	158,595	190,183	177,353	176,503	206,795	179,563
Channel Islands	301,561	225,490	292,869	201,844	296,444	199,134
Other possessions	313,385	1,248,996	276,885	1,080,975	292,570	1,005,158
Total, British Possessions	3,853,889	5,004,391	3,978,669	4,770,212	3,352,502	4,179,080
TOTAL FOREIGN COUNTRIES AND BRITISH POSSESSIONS.						
Twelve Months ended December, 1881	23,224,708	26,336,693	—	—	—	—
Twelve Months ended December, '80	—	—	23,993,280	25,685,670	—	—
Twelve Months ended December, '79	—	—	—	—	21,099,344	22,849,357

GOLD AND SILVER BULLION AND SPECIE.—(United Kingdom.)—*Declared Real Value of,* IMPORTED AND EXPORTED *for the* **Years 1881-80-79.**

[000's omitted.]

Countries.	1881.		1880.		1879.	
	Gold.	*Silver.*	Gold.	*Silver.*	Gold.	*Silver.*
Imported from—	£	£	£	£	£	£
Australia	4,470,	59,	3,614,	79,	3,152,	110,
S. America, Brazil, Mexico, W. Indies	846,	2,158,	853,	2,619,	1,374,	3,767,
United States	23,	2,598,	55,	1,199,	388,	2,596,
	5,339,	4,815,	4,522,	3,897,	4,914,	6,473,
France	2,130,	1,460,	2,118,	2,066,	2,903,	2,347,
Germany, Holland, Belg., and Sweden	1,572,	273,	1,030,	428,	853,	833,
Portugal, Spain, and Gibraltar	105,	33,	47,	37,	563,	274,
Malta and Egypt	415,	31,	60,	19,	409,	22,
China, with Hong Kong and Japan	124,	13,	1,195,	24,	809,	349,
West Coast of Africa	96,	64,	126,	63,	115,	62,
All other Countries	182,	213,	362,	295,	2,765,	374,
Totals Imported	9,963,	6,902,	9,459,	6,829,	13,331,	10,734,
Exported to—						
France	1,089,	704,	602,	173,	696,	723,
Germany, Holland, Belg. & Sweden	641,	965,	424,	770,	3,537,	1,871,
Portugal, Spain, and Gibraltar	1,063,	348,	1,021,	12,	859,	279,
	2,793,	2,017,	2,047,	955,	5,092,	2,873,
B. India, China, Hong Kong and Japan	988,	4,368,	866,	5,447,	219,	6,574,*
United States	7,387,	31,	5,512,	34,	6,949,	614,
South Africa	540,	2,	—	85,	1,730,	24,
S. America, Brazil, Mexico, W. Indies	1,584,	306,	1,749,	224,	1,072,	596,
All other Countries	2,207,	280,	1,654,	315,	2,517,	350,
Totals Exported	15,499,	7,004,	11,829,	7,061,	17,579,	11,031,
Excess of imports	—	—	—	—	—	—
„ exports	5,536,	102,	2,370,	232,	4,248,	297,

* This entry is now shown direct, instead of to Egypt as formerly.

BRITISH CORN.—*Gazette Average Prices* (England and Wales) *Weekly for* 1881.

[This Table is communicated by the Commercial Department, Board of Trade.]

Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)						Weeks ended on Saturday.	Weekly Average. (Per Imperial Quarter.)					
	Wheat.		Barley.		Oats.			Wheat.		Barley.		Oats.	
1881.	s.	d.	s.	d.	s.	d.	1881.	s.	d.	s.	d.	s.	d.
Jan. 1	41	11	31	5	20	10	July 2	45	4	29	3	23	9
„ 8	43	4	31	6	19	10	„ 9	46	8	27	9	23	5
„ 15	42	1	32	1	19	5	„ 16	46	2	26	11	24	6
„ 22	42	4	32	7	20	4	„ 23	46	10	27	5	23	4
„ 29	42	6	32	5	20	2	„ 30	47	1	27	6	23	1
Feb. 5	42	7	33	2	20	3	Aug. 6	46	9	30	1	24	4
„ 12	42	3	32	9	20	6	„ 13	46	9	28	5	24	3
„ 19	41	8	32	1	20	7	„ 20	48	10	28	5	22	11
„ 26	40	9	31	10	20	10	„ 27	51	10	30	9	24	6
March 5	41	7	31	7	21	2	Sept. 3	55	2	32	10	24	2
„ 12	42	3	32	1	21	9	„ 10	54	5	34	6	24	4
„ 19	43	7	31	8	21	10	„ 17	51	1	35	7	22	8
„ 26	43	1	32	2	21	8	„ 24	48	5	35	–	21	5
April 2	44	1	32	2	22	4	Oct. 1	47	9	35	1	19	11
„ 9	44	4	32	–	22	–	„ 8	46	9	34	10	20	2
„ 16	44	9	32	1	22	2	„ 15	47	1	34	9	19	7
„ 23	44	9	31	11	22	7	„ 22	47	1	35	8	20	6
„ 30	44	9	31	6	21	7	„ 29	47	–	35	4	20	2
May 7	44	9	31	5	22	3	Nov. 5	46	9	35	2	20	8
„ 14	44	10	30	9	22	5	„ 12	46	3	34	9	20	7
„ 21	44	2	31	10	22	9	„ 19	45	4	34	6	20	2
„ 28	44	1	31	9	24	1	„ 26	45	4	33	6	19	11
June 4	43	10	30	2	23	8	Dec. 3	44	11	33	3	20	3
„ 11	44	8	31	1	23	2	„ 10	44	9	32	6	20	2
„ 18	44	9	30	5	22	10	„ 17	44	9	31	8	20	6
„ 25	45	–	30	3	23	8	„ 24	44	4	31	6	20	1
							„ 31	44	3	31	6	20	4

BRITISH CORN.—*Gazette Average Prices* (ENGLAND AND WALES), *Summary of, for* **1881**, *with those for* **1880**, *added for Comparison.*

[This Table is communicated by the Commercial Department, Board of Trade.]

Average for	Per Imperial Quarter, 1881.						Per Imperial Quarter, 1880.					
	Wheat.		Barley.		Oats.		Wheat.		Barley.		Oats.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
January	42	5	32	–	20	1	45	11	37	–	21	3
February	41	9	32	5	20	6	43	5	36	2	21	8
March	42	7	31	10	21	7	45	7	34	7	22	8
First quarter	42	3	32	1	20	8	45	1	36	–	21	9
April	44	6	31	11	22	1	48	1	33	9	23	10
May	44	5	31	5	22	10	45	2	32	4	24	9
June	44	6	30	5	23	4	45	1	29	10	26	3
Second quarter	44	6	31	4	22	8	46	1	32	–	24	11
July	46	5	27	9	23	7	43	9	28	6	27	1
August	48	6	29	5	24	–	43	11	29	7	25	5
September	52	3	34	5	23	1	41	2	34	4	21	4
Third quarter	48	10	30	4	23	7	43	–	30	8	24	9
October	47	1	35	1	20	–	41	9	34	10	21	1
November	45	11	34	5	20	4	43	9	34	3	20	11
December	44	7	32	1	20	3	44	1	32	1	20	8
Fourth quarter	45	10	33	10	20	2	43	1	33	10	20	11
THE YEAR	45	4	31	10	21	9	44	4	33	1	23	1

REVENUE OF THE UNITED KINGDOM.

Net Produce in QUARTERS *and* YEARS *ended* 31*st* DEC., **1881-80-79-78.**

[000's omitted.]

QUARTERS, ended 31st Dec.	1881.	1880.	1881.		Corresponding Quarters.	
			Less.	More.	1879.	1878.
	£	£	£	£	£	£
Customs	5,230,	5,376,	146,	—	5,356,	5,484,
Excise	8,212,	6,700,	—	1,512,	6,460,	6,990,
Stamps	3,187,	3,105,	—	82,	2,725,	2,628,
Taxes	30,	35,	5,	—	26,	26,
Post Office	1,740,	1,677,	—	63,	1,630,	1,554,
Telegraph Service	400,	395,	—	5,	365,	325,
		17,288,	151,	1,662,	16,562,	17,007,
Property Tax	618,	660,	42,	—	486,	440,
		17,948,	193,	1,662,	17,048,	17,447,
Crown Lands	130,	135,	5,	—	135,	141,
Interest on Advances	390,	404,	14,	—	326,	383,
Miscellaneous	983,	1,053,	79,	—	1,108,	1,098,
Totals	20,920,	19,540,	282,	1,662,	18,617,	19,069,
			NET INCR. £1,380,			

YEARS, ended 31st Dec.	1881.	1880.	1881.		Corresponding Years.	
			Less.	More.	1879.	1878.
	£	£	£	£	£	£
Customs	19,294,	19,268,	—	26,	19,750,	20,165,
Excise	27,252,	25,770,	—	1,482,	26,277,	27,372,
Stamps	12,247,	11,965,	—	282,	11,019,	10,652,
Taxes	2,745,	2,719,	—	26,	2,644,	2,655,
Post Office	6,875,	6,570,	—	305,	6,319,	6,180,
Telegraph Service	1,630,	1,570,	—	60,	1,375,	1,330,
	—	—	—	2,181,	67,384,	68,354,
Property Tax	11,068,	9,495,	—	1,573,	9,485,	6,031,
	—	—	—	3,754,	76,869,	74,385,
Crown Lands	370,	390,	20,	—	399,	410,
Interest on Advances	1,232,	1,337,	105,	—	1,127,	1,047,
Miscellaneous	3,969,	4,206,	237,	—	4,272,	4,642,
Totals	86,682,	83,290,	362,	3,754,	82,667,	80,484,
			NET INCR. £3,392,			

LONDON CLEARING; CIRCULATION, PRIVATE AND PROVINCIAL.

The London Clearing, and the Average Amount of Promissory Notes in Circulation in ENGLAND *and* WALES *on Saturday in each Week during the Year* **1881**; *and in* SCOTLAND *and* IRELAND, *at the Dates, as under.*

[0,000's omitted.]

ENGLAND AND WALES.					SCOTLAND.				IRELAND.		
DATES. *Saturday.*	*London:* Cleared in each Week ended *Wednesday.**	Private Banks. (Fixed Issues, 3,55).	Joint Stock Banks. (Fixed Issues, 2,41).	TOTAL. (Fixed Issues, 5,96).	Weeks ended	£5 and upwards.	Under £5.	TOTAL. (Fixed Issues, 2,68).	£5 and upwards	Under £5.	TOTAL. (Fixed Issues, 6,35).
1881.	£	£	£	£	1881.	£	£	£	£	£	£
Jan. 1.....	70,40	1,73	1,66	3,38							
„ 8.....	161,42	1,78	1,72	3,50							
„ 15.....	105,04	1,78	1,71	3,49	Jan. 15...	1,83	3,66	5,49	3,71	3,07	6,78
„ 22.....	156,62	1,74	1,69	3,42							
„ 29.....	92,99	1,72	1,67	3,39							
Feb. 5.....	144,61	1,70	1,67	3,37							
„ 12.....	97,89	1,66	1,63	3,28	Feb. 12...	1,70	3,45	5,15	3,66	2,99	6,66
„ 19.....	134,35	1,62	1,60	3,22							
„ 26.....	93,27	1,59	1,58	3,17							
Mar. 5.....	161,86	1,60	1,60	3,20							
„ 12.....	104,05	1,59	1,59	3,18	Mar. 12...	1,63	3,40	5,03	3,59	2,85	6,44
„ 19.....	138,73	1,59	1,60	3,19							
„ 26.....	123,73	1,62	1,64	3,26							
April 2.....	93,18	1,69	1,69	3,38							
„ 9.....	157,77	1,76	1,76	3,52	April 9...	1,64	3,44	5,68	3,64	2,74	6,38
„ 16.....	144,15	1,77	1,77	3,55							
„ 23.....	82,77	1,77	1,78	3,55							
„ 30.....	96,10	1,77	1,78	3,55							
May 7.....	141,37	1,78	1,80	3,58	May 7...	1,76	3,59	5,34	3,87	2,74	6,61
„ 14.....	100,98	1,79	1,80	3,59							
„ 11.....	165,40	1,76	1,78	3,53							
„ 28.....	97,41	1,71	1,73	3,44							
June 4.....	169,54	1,68	1,71	3,40	June 4...	2,24	4,02	6,26	3,73	2,72	6,45
„ 11.....	93,26	1,67	1,68	3,35							
„ 18.....	156,08	1,65	1,64	3,29							
„ 25.....	108,74	1,63	1,62	3,25							
July 2.....	150,59	1,65	1,62	3,27	July 2...	1,90	3,79	5,69	3,50	2,62	6,11
„ 9.....	133,65	1,69	1,65	3,33							
„ 16.....	101,76	1,68	1,61	3,30							
„ 23.....	147,42	1,64	1,59	3,23							
„ 30.....	91,42	1,62	1,57	3,19	„ 30...	1,75	3,72	5,47	3,47	2,57	6,05
Aug. 6.....	124,80	1,61	1,58	3,19							
„ 13.....	108,71	1,59	1,54	3,14							
„ 20.....	130,24	1,57	1,52	3,09							
„ 27.....	94,60	1,54	1,51	3,05	Aug. 27...	1,70	3,65	5,35	3,36	2,60	5,96
Sept. 3.....	137,64	1,55	1,51	3,06							
„ 10.....	102,93	1,56	1,52	3,08							
„ 17.....	84,97	1,58	1,54	3,12							
„ 24.....	125,28	1,60	1,56	3,16	Sept. 24...	1,74	3,71	5,45	3,48	2,69	6,17
Oct. 1.....	87,70	1,68	1,61	3,29							
„ 8.....	158,88	1,78	1,69	3,47							
„ 15.....	103,47	1,82	1,72	3,53							
„ 22.....	147,61	1,79	1,72	3,51	Oct. 22...	1,77	3,80	5,57	3,86	3,13	6,99
„ 29.....	93,48	1,78	1,73	3,51							
Nov. 5.....	144,82	1,79	1,73	3,52							
„ 12.....	102,59	1,77	1,75	3,52							
„ 19.....	147,26	1,75	1,72	3,47	Nov. 19...	2,03	4,09	6,12	4,21	3,36	7,57
„ 26.....	104,54	1,74	1,72	3,46							
Dec. 3.....	133,85	1,71	1,70	3,41							
„ 10.....	119,78	1,69	1,67	3,36							
„ 17.....	100,42	1,67	1,66	3,33	Dec. 17...	2,01	4,07	6,07	4,11	3,36	7,48
„ 24.....	149,92	1,68	1,65	3,33							
„ 31.....	85,67	1,65	1,63	3,28							

* The Wednesdays *preceding* the Saturdays.

BANK OF ENGLAND.

Pursuant to the Act 7th and 8th Victoria, cap. 32 (1844)

[0,000's omitted.]

1	2	3	4	5	6	7
ISSUE DEPARTMENT.					COLLATERAL COLUMNS.	
Liabilities.		Assets.			Notes in Hands of Public. (Col. 1 minus col. 16.)	Minimum Rates of Discount at Bank of England.
Notes Issued.	DATES. (Wednesdays.)	Government Debt.	Other Securities.	Gold Coin and Bullion.		
£ Mlns.	1881.	£ Mlns.	£ Mlns.	£ Mlns.	£ Mlns.	1880. Per cnt.
38,18	Jan. 5	11,02	3,98	23,18	26,95	8 Dec. 3
38,08	„ 12	11,02	3,98	23,08	26,55	1881.
38,18	„ 19	11,02	3,98	23,18	26,37	19 Jan. 3½
38,57	„ 26	11,02	3,98	23,57	26,01	
39,23	Feb. 2	11,02	3,98	24,23	26,32	
39,94	„ 9	11,02	3,98	24,94	25,89	
40,69	„ 16	11,02	3,98	25,69	25,43	16 Feb. 3
41,38	„ 23	11,02	3,98	26,38	25,26	
41,38	Mar. 2	11,02	3,98	26,38	25,76	
41,83	„ 9	11,02	3,98	26,83	25,37	
41,65	„ 16	11,02	3,98	26,65	25,16	
41,81	„ 23	11,02	3,98	26,81	25,23	
41,59	„ 30	11,02	3,98	26,59	25,84	
40,73	April 6	11,02	3,98	25,73	26,60	
39,91	„ 13	11,02	3,98	24,91	26,71	
40,70	„ 20	11,02	3,98	24,70	26,52	
40,94	„ 27	11,02	4,78	25,19	26,31	27 April 2½
40,78	May 4	11,02	4,78	25,03	26,93	
40,69	„ 11	11,02	4,78	24,94	26,70	
40,28	„ 18	11,02	4,78	24,53	26,70	
40,39	„ 25	11,02	4,78	24,64	26,33	
40,44	June 1	11,02	4,78	24,69	26,76	
40,41	„ 8	11,02	4,78	24,66	26,90	
41,04	„ 15	11,02	4,78	25,29	26,30	
41,57	„ 22	11,02	4,78	25,82	26,42	
41,73	„ 29	11,02	4,78	25,98	26,95	
41,52	July 6	11,02	4,78	25,77	27,54	
41,26	„ 13	11,02	4,78	25,49	25,28	
41,16	„ 20	11,02	4,78	25,41	27,23	
40,97	„ 27	11,02	4,78	25,22	26,97	
39,99	Aug. 3	11,02	4,78	24,24	27,66	
39,39	„ 10	11,02	4,78	23,64	27,39	
39,26	„ 17	11,02	4,78	23,51	27,02	17 Aug. 3
38,39	„ 24	11,02	4,78	22,64	26,58	24 „ 4
38,27	„ 31	11,02	4,78	22,52	26,69	
37,92	Sept. 7	11,02	4,78	22,17	26,51	
37,86	„ 14	11,02	4,78	22,11	26,23	
38,11	„ 21	11,02	4,78	22,36	26,06	
37,95	„ 28	11,02	4,78	22,20	26,32	
36,65	Oct. 5	11,02	4,78	20,90	27,13	
36,11	„ 12	11,02	4,78	20,36	26,90	12 Oct. 5
36,18	„ 19	11,02	4,78	20,43	26,67	
36,08	„ 26	11,02	4,78	20,33	26,20	
35,74	Nov. 2	11,02	4,78	19,99	26,48	
35,67	„ 9	11,02	4,78	19,92	26,11	
35,42	„ 16	11,02	4,78	19,67	25,98	
35,45	„ 23	11,02	4,78	19,70	25,55	
35,39	„ 30	11,02	4,78	19,64	25,54	
35,59	Dec. 7	11,02	4,78	19,84	25,45	
35,63	„ 14	11,02	4,78	19,88	25,29	
35,63	„ 21	11,02	4,78	19,88	25,23	
35,31	„ 28	11,02	4,78	19,56	25,51	

—Weekly Return.

for Wednesday in each Week, during the Year **1881.**

[0,000's omitted.]

8	9	10	11	12	13	14	15	16	17	18
Banking Department.										
Liabilities.						Assets.				Totals of Liabilities and Assets.
Capital and Rest.		Deposits.		Seven Day and other Bills.	Dates. (Wednesdys.)	Securities.		Reserve.		
Capital.	Rest.	Public.	Private.			Government.	Other.	Notes.	Gold and Silver Coin.	
£	£	£	£	£		£	£	£	£	£
Mlns.	Mlns.	Mlns.	Mlns.	Mlns.	1881.	Mlns.	Mlns.	Mlns.	Mlns.	Mlns.
14,55	3,22	9,07	24,74	,25	Jan. 5	15,86	23,65	11,23	1,04	51,82
14,55	3,30	5,16	25,34	,30	„ 12	15,25	20,83	11,53	1,05	48,66
14,55	3,32	4,66	24,97	,27	„ 19	14,35	20,52	11,81	1,10	47,78
14,55	3,33	5,67	24,74	,27	„ 26	14,35	20,55	12,56	1,11	48,58
14,55	3,36	6,67	24,90	,23	Feb. 2	14,35	21,20	12,91	1,23	49,71
14,55	3,38	8,62	24,98	,27	„ 9	14,35	22,21	14,05	1,18	51,80
14,55	3,42	9,87	25,29	,23	„ 16	15,83	20,96	15,26	1,32	53,36
14,55	3,39	10,57	24,20	,22	„ 23	14,83	20,68	16,12	1,30	52,93
14,55	3,70	10,52	25,70	,23	Mar. 2	14,83	23,05	15,62	1,21	54,71
14,55	3,71	11,56	24,57	,25	„ 9	15,86	21,05	16,46	1,28	54,65
14,55	3,72	11,90	26,09	,24	„ 16	15,86	22,90	16,49	1,24	56,50
14,55	3,75	11,87	24,54	,22	„ 23	15,86	21,18	16,58	1,31	54,93
14,55	3,74	10,79	25,20	,19	„ 30	15,36	22,09	15,75	1,27	54,48
14,55	3,10	8,08	25,67	,26	April 6	15,40	20,89	14,13	1,23	51,65
14,55	3,10	7,05	25,95	,26	„ 13	15,74	20,66	13,20	1,31	50,92
14,55	3,11	7,14	24,83	,24	„ 20	14,99	19,37	14,18	1,33	49,86
14,55	3,11	6,83	25,18	,22	„ 27	15,40	18,60	14,63	1,21	49,90
14,55	3,10	6,45	24,75	,22	May 4	15,69	18,32	13,85	1,23	49,09
14,55	3,11	6,44	25,07	,24	„ 11	15,79	18,35	13,99	1,29	49,42
14,55	3,12	7,01	25,49	,26	„ 18	15,88	19,05	13,58	1,32	50,42
14,55	3,12	7,13	25,42	,21	„ 25	15,88	19,18	14,06	1,31	50,42
14,55	3,07	7,06	25,35	,24	June 1	15,88	19,48	13,68	1,23	50,27
14,55	3,07	7,45	24,15	,22	„ 8	14,91	19,79	13,51	1,24	49,45
14,55	3,08	7,71	26,02	,25	„ 15	14,91	20,74	14,74	1,23	51,62
14,55	3,08	8,36	25,12	,25	„ 22	14,91	20,09	15,15	1,22	51,36
14,55	3,07	8,79	27,34	,21	„ 29	14,91	23,03	14,78	1,25	53,97
14,55	3,30	6,48	27,44	,25	July 6	15,79	21,11	13,98	1,15	52,02
14,55	3,33	4,75	28,72	,26	„ 13	16,27	20,20	13,98	1,16	51,61
14,55	3,35	4,66	28,48	,26	„ 20	15,89	20,29	13,93	1,18	51,29
14,55	3,35	4,57	28,33	,23	„ 27	15,89	20,11	14,00	1,04	51,03
14,55	3,38	4,16	27,26	,24	Aug. 3	15,89	20,37	12,33	1,00	49,59
14,55	3,39	4,15	25,77	,27	„ 10	14,66	20,43	12,00	1,03	48,12
14,55	3,42	4,50	25,87	,24	„ 17	14,66	20,63	12,24	1,04	48,58
14,55	3,41	5,31	25,46	,25	„ 24	14,66	21,39	11,81	1,12	48,98
14,55	3,71	5,15	26,24	,24	„ 31	14,66	22,66	11,58	1,00	49,90
14,55	3,72	5,03	25,78	,27	Sept. 7	14,56	22,37	11,41	1,02	49,35
14,55	3,72	5,00	25,66	,27	„ 14	14,56	22,07	11,63	,94	49,19
14,55	3,75	5,40	25,49	,27	„ 21	14,56	21,89	12,05	,95	49,45
14,55	3,75	5,08	24,96	,27	„ 28	14,51	21,59	11,63	,87	48,61
14,55	3,05	9,02	24,87	,36	Oct. 5	17,61	23,87	9,52	,80	51,80
14,55	3,10	4,70	26,01	,28	„ 12	16,77	21,96	9,21	,71	48,64
14,55	3,11	3,33	25,49	,23	„ 19	14,92	21,44	9,51	,83	46,71
14,55	3,11	3,30	24,93	,22	„ 26	14,32	20,99	9,88	,92	46,11
14,55	3,11	3,29	23,38	,25	Nov. 2	14,12	20,33	9,26	,88	44,59
14,55	3,11	3,01	23,51	,25	„ 9	13,60	20,47	9,56	,81	44,43
14,55	3,12	3,12	23,92	,22	„ 16	13,44	20,65	9,44	1,01	44,33
14,55	3,12	4,20	22,29	,23	„ 23	13,24	20,35	9,90	,91	44,40
14,55	3,09	4,23	24,88	,24	„ 30	13,24	22,94	9,85	,95	46,99
14,55	3,09	4,91	2,86	,25	Dec. 7	13,24	21,32	10,14	,95	45,65
14,55	3,09	5,66	22,39	,21	„ 14	13,24	21,41	10,34	,91	45,90
14,55	3,10	6,58	22,40	,20	„ 21	13,24	22,32	10,40	,87	46,85
14,55	3,11	6,32	24,23	,17	„ 28	13,24	24,59	9,80	,76	48,39

FOREIGN EXCHANGES.—*Quotations as under,* LONDON *on Paris, Hamburg, and Calcutta;—and New York, Calcutta, and Hong Kong, on* LONDON, *for* **1881.**

1	2	3	4	5	6	7	8	9
			Calcutta.				Price per Ounce.	
DATES. (Approximately.)	London on Paris. 3 m. d.	London on Hamburg. 3 m. d.	London on Calcutta.	Indian Council Bills. Minimum Price Per Rupee.	New York on London. 60 d. s.	Hong Kong on London. 4 m. d.	Gold Bars (Fine).	Standard Silver in Bars.
1881.			*d.*	*d.*	Per cnt.	*d.*		*d.*
Jan. 6	25·56¼	20·64	19 7/8	19 11/16	4·80½	44¼	77·9¼	51½
„ 20	25·62½	20·65	19 7/8	19 5/8	4·81½	44 3/8	77·9¼	51 5/8
Feb. 3 ...	25·61¼	20·66	19 3/4	19 9/16	4·82½	44¼	77·9	51 5/16
„ 17	25·63¾	20·66	19 3/4	19 15/16	4·83	44 3/8	77·9	52¼
Mar. 3	25·63¾	20·69	20	20 1/16	4·80	45¼	77·9¼	52 5/8
„ 17	25·62½	20·68	20	19 15/16	4·80½	44 7/8	77·10	52
April 7	25·62½	20·69	20	19 13/16	4·80¾	45¼	77·9¼	52
21	25·60	20·70	20 1/8	19 15/16	4·81½	45½	77·9	52⅛
May 5	25·57½	20·68	20	19 3/4	4·84¼	45⅛	77·9	51¾
„ 19	25·51¼	20·70	20	19 11/16	4·84 3/8	44 7/8	77·9½	51 5/8
June 2	25·47½	20·66	20	19 11/16	4·83¼	45	77·9½	51 5/8
„ 16	25·52½	20·70	19 3/4	19 7/16	4·84	44 31/2	77·9	51
July 7	25·60	20·72	19 3/4	19 7/8	4·83½	45	77·9	51¾
„ 21	25·52½	20·71	19 3/4	19 5/8	4·82¾	44¾	77·10	51 7/8
Aug. 4	25·52½	20·69	19 3/4	19 11/16	4·82¼	44½	77·10	51¼
„ 18	25·55	20·72	19 7/8	19¾	4·81¼	44 5/8	77·10	51 9/16
Sept. 1	25·65	20·76	20	19 7/8	4·79¼	45	77·10½	51¾
„ 15	25·63¾	20·75	19 7/8	19 13/16	4·80¼	45	77·10	51 11/16
Oct. 6	25·75	20·80	20	19 7/8	4·78	45¼	77·10	51 7/8
„ 20	25·77½	20·79	20	19 7/8	4·79¼	45⅛	77·9	51 13/16
Nov. 3	25·65	20·74	20	19 15/16	4·80¼	45½	77·9	51 15/16
„ 17	25·62½	20·74	20	19 7/8	4·80¼	45½	77·9½	51 7/8
Dec. 1 ...	25·62½	20·72	20	19 7/8	4·80	45 3/8	77·9¼	51 7/8
„ 15	25·62½	20·74	20	19 7/8	4·79¾	45	77·9½	51¾

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The Use *of* Import *and* Export Statistics.

By R. Giffen, Esq.

[Read before the Statistical Society, 21st March, 1882.]

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I.—*Introductory.*

We must all agree in this place, I think, that there is cause both for encouragement and discouragement to us as regards the prospects of the study in which we are engaged in the very extensive use of statistics which some recent controversies have occasioned. I refer particularly to the balance of trade controversy, and the controversy between fair trade and free trade which made so much noise last autumn, but which has rather subsided of late, as questions of the kind are apt to do when trade itself is improving. In these controversies, which have run very much into each other, the fair traders having made use of the alleged balance of trade being against this country to support their arguments, the appeal has been very largely to statistics. Literary journals and magazines, which rather dread figures as a rule, have admitted them into their columns on a liberal scale, including even tables in the rough, as we should here consider them. But while this appeal to statistics is cause for satisfaction to us, the actual handling of the

subjects of our study has been such, I think, as to prove how little it has really advanced, not merely amongst the multitude only, but amongst the classes who are most carefully and highly cultivated. There has been a great hash of figures, indicating that those who use them have hardly the rudiments of statistical ideas, whether true or false. In journals of the highest standing there are the wildest blunders of the schoolboy order. Thus in the "Quarterly Review" of July last a writer states and argues upon the statement: "It is "estimated that about a million of acres of land have gone out of "cultivation during the last ten years."* The fact, of course, is that there is not a year in the last ten in which the cultivated area of the United Kingdom has not increased, the total increase being nearly 2 million acres. The same writer also makes a great mess of the very figures of imports and exports with which I propose to deal specially to-night. He makes the excess of imports into the United Kingdom in 1879 170,595,983*l.*, and in 1880 187,179,530*l.*, and in the first five months of 1881 78,782,396*l.*, having obviously omitted in all cases the re-exports of foreign and colonial merchandise, by which these figures would be reduced by 60 million pounds a year or upwards, while he quotes as his authority the *quarterly* returns of the Board of Trade, which issues no quarterly returns relating to imports and exports, but only monthly and annual returns.† Similarly a writer in the "Nineteenth Century," for August last, Sir Edward Sullivan, compares the property assessed to the legacy and succession duties in England with the property assessed to similar duties in France, which has no such duties at all, but which has only probate duties, which are levied like ours on the gross amount of the estates of deceased persons, without deduction for debts, whereas our legacy and succession duties are imposed on the net amounts of property.‡ Similarly he speaks elsewhere of the "commerce" of the world having increased 36 per cent. in ten years, and English commerce so much less,§ the actual fact being of course that there is no figure in existence which can be spoken of as representing the commerce of the world; while the writer probably meant the foreign commerce, and yet excluded from his comparison one of the most important parts of English foreign commerce, viz., the shipping. Our satisfaction therefore at seeing so frequent an appeal to statistics must be considerably qualified by the nature of the appeal. It is evidently still quite possible for essays to find admission to journals of high

* "Quarterly Review," July, 1881, p. 282.

† Ibid., July, 1881, p. 288. It is just possible that the writer may refer to a quarterly account published at intervals in the monthly Board of Trade returns, but his allusion is so vague as to indicate that he has little idea what the publications are.

‡ "Nineteenth Century," August, 1881, p. 173.

§ Ibid., August, 1881, p. 172.

standing like the "Nineteenth Century" and the "Quarterly "Review," in which the writers not only make mistakes, but mistakes of an elementary and substantial character as if in discussing chemistry a writer were to confound oxygen with hydrogen, or as if in discussing geometry he were to confound an isosceles with a right-angled triangle. Writers who were capable of making such mistakes in chemistry and geometry, however cultivated in other respects, would either not find admission to the pages of the "Nineteenth Century" or the "Quarterly Review," or their mistakes would be corrected by the editors; but the popular standard for statistics is evidently as yet not so strict as it is for other scientific studies. Any man, it seems to be thought, can handle figures, and writers who are otherwise competent, are not afraid to touch them as they would be afraid to touch chemistry, or geometry, or botany, or geology, or almost any science one could name. That our special study should be so little advanced, although there is a dim idea in the public mind of the utility of statistics, must surely be a matter for concern to a Society which has been established for nearly fifty years for the express purpose of diffusing right ideas and information. We have still, it is plain, a great work before us to perform.

It is in this view that the present paper, which is mainly directed to the method of statistics, has been written. The object is to show how great may be the errors in using the comparatively well known figures of imports and exports, unless proper caution is exercised, and how difficult it is to elicit true conclusions on the questions respecting the balance of trade and free trade *v.* protection, which have lately been discussed. Statistics, I need hardly say in this company, are almost always difficult. No table almost can be used without qualification and discretion. The moment we perceive that figures are used without qualifications and without anxiety to appreciate them in their right meaning, and to support no greater conclusion than they can be made to bear, we may be sure there is something wrong. My object will have been gained, if the remarks I have to make, and the discussion they elicit, help to popularise what are really truisms within these walls, but which ought also to be truisms outside, if statistics held the place they ought to do among politicians and public men.

II.—*General Remarks on Import and Export Figures.*

In dealing with the causes of error in handling import and export statistics, it would of course be superfluous for me to do more than mention such questions of method as are common to them and all other statistics. In using them, as in other statistics, it is of course necessary to see that in comparing different years or different

countries the data are substantially of the same nature. I shall have to notice some special difficulties of this sort in regard to imports and exports which I am aware of; but I am only at first noticing the principle as a well-known one. It is also necessary in comparing one period with another, so as to draw out a curve of progress or retrogression, to ascertain whether the figures of single years or of less periods can safely be used, or whether, as is more likely to be the case, the mean or average of groups of years ought to be used. For some purposes, as we know from statistics of crime, population, and the like, five, and even ten years' periods are by no means too long to be considered, and common sense will tell us that for many purposes this will also be the case with trade statistics, trade having ups and downs, if nothing else has, whatever *régime* it may be subject to, and the statistician's first business being to eliminate the errors which may be due to such ups and downs. A large discourse might be written even on these points, which are habitually neglected by popular writers who use statistics, and by persons of more authority. A question, for instance, was put by Mr. McIver last session,* to the President of the Board of Trade, the whole point of which was that our exports to France had diminished from 33 million to 28 million pounds in ten years, while our imports had increased from 30 million to 42 million pounds in the same period, and the explanation being that the apparent decrease in the one case and increase in the other corresponded only to temporary facts of trade, because the year 1871, owing to the Franco-German war, was of a wholly exceptional character as regards the trade between France and England. Another elementary difficulty is in the use of percentages, especially those of increase or decrease, nothing being more necessary than a cautious use of such percentages, and, especially when comparisons are made, a use of them only with reference to amounts as well as percentages. In the beginning of things percentages may be large, as we all know, but the real growth may be largest where the percentage is least, in consequence of the greater amount at which the percentage is calculated. We are all familiar here also with M. Quetelet's illustration of the enormous mortality of a particular street, in which nearly all the inhabitants died, and where the area was really too small to yield any good average. Some of the arguments of the "Nineteenth "Century," already referred to as to the percentages of the growth of the commerce of different countries, are really as illogical. But elementary as this paper is intended to be, I may perhaps be excused from going into such extreme commonplaces, which relate not merely to imports and exports, but to all statistics. When these matters are properly attended to, enough remains to be considered

* "Times," 14th June, 1881.

as regards imports and exports which may well demand the utmost caution.

The *first* point to be considered, as in all statistics, is the degree of accuracy obtained in the original data. The figures of imports and exports are sometimes used, and we are all of us too apt to use them, as if they were figures in accounts, giving rise to no question respecting the nature of the data; as if every particle of commodities and every pound of value sent out or brought into a country, and to and from what countries they were sent or brought, were recorded with perfect accuracy; and as if too the accounts of all countries, and of each country at different times, were made up on the same principles, and could be trusted to the same degree. Those who know anything of statistical compilation, and even those who do not know, if they only consider for a moment the necessary conditions, will perceive at once that no impression could be more unfounded. In all statistical inquiries the nature of the data is a necessary question, and there are great varieties in the possible degree of accuracy, while the same data may be sufficient for one purpose and not for another. Thus a census like that of the United Kingdom, made on the same day for the whole kingdom, by a staff of enumerators collecting individual returns from all householders, yields results which are absolutely trustworthy to a most infinitesimal fraction as regards the numbers of the people, as regards the sexes, as regards the conjugal condition, that is, whether married or not, and—with some exceptions perhaps—as regards the numbers at each age. The population of small localities on the day of the census may also be considered to be stated as regards all these details with practically complete accuracy. But when we come to such details as the occupations of the people, which involve inherent difficulties of statement by those who have to make the returns, and of classification by those who compile, we are plainly on more treacherous ground. Especially with the smaller occupations, and in comparisons between different localities, it would become necessary for inquirers to use the figures with judgment and discretion, and to bring to their aid a study of the instructions to the enumerators, and information from local or special sources. In using the population figures again for deducing birth, marriage, and death-rates, the fact that the population returned is only the population on a given day, and that there are many localities in which the population on other days of the year would be less or more, has to be considered; while the special birth, marriage, and death-rates themselves, that is the rates as compared with the population at particular ages, would be still more liable to error. There are methods for eliminating errors known to statistical experts by which the data can be used, but the methods must be employed if any good result is to be obtained.

To give another illustration from matters within my own department—the emigration statistics. As far as numbers are concerned, these statistics are complete—we have practically a complete record of passengers leaving the country for places out of Europe, and returning to it from places out of Europe. Making the assumption, as I believe we may do, that the balance of the resident population is unaffected by people coming and going from and to European ports,—the excess of "imports" from such places, if I may adapt a well known expression to this subject, being practically all exported to places out of Europe,—the emigration and immigration statistics become perfectly trustworthy as to numbers. I think also the restrictions made as to the nationality and sex of the emigrants, and the conjugal condition, with the numbers of children, are fairly to be trusted. But when we get to the "occupations" I am not so sure. We have nothing to trust to but the description given by the emigrants themselves, as reported by officers who are busy with other work; and I confess I should not like to found important inferences on minute changes in the numbers from year to year of so-called joiners, or painters, or farmers, or even "labourers." It would be impossible to use the figures for such details to any good purpose without much discretion, and a wide knowledge of local facts determining the emigration. To take yet another illustration—again from my own department. While the total entries and clearances of ships at ports in the United Kingdom in the foreign trade may be held to be completely accurate, there is an undoubted defect in the statistics of particular ports, owing to the practice which has been established of only returning a vessel as entered and cleared at one port, though it may really enter and clear at more than one. By the present practice the total of the port accounts agrees with that of the United Kingdom, and I believe the trade of the ports generally is relatively fairly accurate, but the practice nevertheless might obviously lead to difficulty and wrong inferences in special cases. The nature of the data is thus an all important matter.

Now, as to the nature of the data in import and export statistics, we have the advantage of a paper in our own *Journal*, which Mr. Bourne read to us in 1871, and which will be found the first in his volume, "Trade, Population, and Food." A more useful paper, I think, was never laid before the Society, and I shall do little more than refer to it. Those interested will find a full account in it of how the data are obtained, and the means used to check them, with some critical observations on the main point I am now suggesting—the degree of accuracy of the data. There are many points in the paper and in the whole subject which in my official position I should hardly feel at liberty to discuss, but the main points are indisputable. The data, both as to quantities and values, with the countries of origin or destination, are derived from the declarations of im-

porters in the case of imports, and of shippers in the case of exports, subject to a certain check by the customs' officers, and there is a margin of error to be allowed for in these declarations. Mr. Bourne, as regards quantities only, compares the declarations in the case of dutiable goods imported with the actual weights or measurements subsequently made by the customs' officers, and points out a variation between the two ranging from 0·21 per cent. in the case of cocoa, to 5·70 per cent. in the case of tobacco, and averaging for all the articles 1·50 per cent. According to this, the declarations actually made, and which are the basis of all the statistics, are subject to such variations. They are no doubt checked by the customs' officers and corrected for the annual statement of trade, so that the limit of error is farther reduced, but in the case of non-dutiable goods some limit of error must remain. These are the facts as regards quantities only. As regards values, what Mr. Bourne points out as regards the imports is especially important:—

"The present system has great disadvantages, arising from the want of knowledge on the part of the importers, the indifference of many who pass the entries, and the impossibility of the department exercising a valid check. It is well known that a very large proportion of the goods sent to this country are on consignment, and not on purchase, in which case there is no invoice or statement of prices. In these cases the consignee is very much in ignorance of their quality or price, and therefore unable to fix a proper value until they have been examined and sampled. Where, again, as is very frequently done, the entry is made by a mere agent, who may gather the description of the goods from the ship's report, and estimate the weight from the nature of the packages; there is no guide at all to the value. In other instances there is great indisposition to let the true value be known. Supposing, as is constantly the case, wine to be brought from Hamburg in casks, branded with the mark of the best Spanish vintages, it is very improbable that, however vile the stuff may be, it will be valued at less than the price of good sherry. The greatest vigilance, therefore, is necessary to guard against the most erroneous values, but the department can only interfere in extreme cases, for it is unable to discover or question any but very extravagant departures from the average. The law has given it the power of calling for invoices or other proof, which is frequently done, and fines are often inflicted for wilful or careless departures from the truth. The only real security, however, is in exciting an interest amongst those who have to declare the value. When once it is understood that these and other particulars are of real importance, there is, in importers generally, too much good feeling and desire to do what is right, to permit of other than the best information it is in their power to give being placed at the disposal of the authorities. There seems, however, no way of providing for the very numerous cases in which the consignee is ignorant of the value, or the agent who puts in the entry is without instructions to guide him."

So far as I can judge, the check on values in the case of exports must be even more difficult of application than it is in the case of imports.

We have thus two facts before us: first, a possibility of error in the original declarations as to quantity, which are found to vary from the actual quantities on a considerable average of articles as much as 1·50 per cent., and in extreme cases nearly 6 per cent., and

which cannot be completely controlled by the officers compiling the statistics; and next, a farther possibility of error in the declarations of values, owing to the want of interest in the merchants or agents making them. I need hardly say here, that errors arising in this way are not likely to affect the returns as a whole as much as they may affect special articles; that in the absence of special motives for making wrong declarations in one direction, the errors made through indifference or carelessness by thousands of people, are likely to compensate each other in so vast a field as that of the imports and exports; and that the comparison between two or three years coming together, in which there is no great change of system, might be fairly trustworthy as to the progress or retrogression shown, even allowing for a larger margin of error than it is necessary to allow for in the original data. But the more detailed the use which is made of the statistics, the more necessary it is to keep in mind that there is a margin of error.

Another point has also to be considered. We may know pretty well where we are in comparing two or three years at the present time; but the farther we go back the less is our knowledge as to the way the business was done formerly, and as to the increased or diminished accuracy of the data from that time. This last fact we know is especially important as to the imports, for there was a very considerable change of system in 1870, which Mr. Bourne fully describes in the paper already referred to. One of the principal changes was in the mode of ascertaining the values, which previously to that date, from 1854 downwards, had been computed according to a plan introduced by Mr. James Wilson, but which have since been declared by the merchants as already explained. We cannot be quite sure, I think, that the computed values before 1870 are on all fours with the declared values since; the presumption would be that they are not. On this head I can most heartily re-echo the complaint made by Mr. Bourne in the paper already cited, that the old plan was not maintained in conjunction with the new for several years. His assertion that the change of system produced in many articles of import an apparently great divergence between the values of 1871 and former years, is a most serious one, and should warn us all to use a great deal of caution in carrying our comparisons of import values farther back than 1870.

Farther, whatever dependence may be placed on the returns of the total imports and exports of particular articles, and of the aggregate imports and exports, a fresh difficulty arises in making the data complete as regards particular countries traded with. Formerly it was a very general practice to consider imports as coming from the country they had last left, although they might only have been in transit through that country; and exports as

being despatched to the country they would first arrive at, although they might only be going there in transit. The attempt has been made in recent years to show the countries of ultimate origin and destination, but it is impossible to suppose that this attempt has been completely successful. Where there is a through bill of lading, merchants can easily declare the country of origin or destination as appearing in that document, but such documents themselves do not always disclose the exact facts on this head. I have again to refer to Mr. Bourne's statements in the paper already referred to, but I may add one or two obvious facts, which you can all test. It is beyond question that there is an appreciable amount of trade between this country and Switzerland. We import Swiss clocks and watches, and we send there cotton and other yarns to be made up, besides other articles. But Switzerland does not even figure as a separate country in our returns. Our trade therewith figures as part of the trade with France, Belgium, Holland, and perhaps Italy. Another of these facts is, that in recent years a great deal of raw sugar we imported was of Austrian origin, but the bulk of it figured in our returns as an import from Germany. Apart then from the above question as to the data themselves, there is a special source of error in the accounts of the trade with particular countries. It must not be supposed that all the so-called trade with France, or Belgium, or Holland, or the United States, is really our trade with those countries. Large deductions or additions may have to be made in a thorough study of the subject.

I have spoken mainly of the import and export statistics of the United Kingdom, but *mutatis mutandis* the same remarks apply to the data of imports and exports in every country. Governments which have a voluminous tariff are probably more careful about the imports than we are, verifying values and quantities in a way we do not attempt; such Governments are probably also very careful in verifying the quantities and values of articles exported on which there is a drawback; but they are none of them likely to be more careful than we are about exports where there is no drawback, and none, we believe, are in fact more careful, while their extra care as to imports is no doubt balanced in most cases, in countries like the United States for instance, by the ingenuity and resource of the smuggler. No foreign country, therefore, any more than England, has import and export statistics which can be used as absolutely accurate in the sense commonly assumed. The remarks already made as to the possibility of useful comparisons, the nearer the years compared are together, and the danger of not allowing for changes of system, also apply to foreign countries as well as our own. On this latter head it happens to be possible to give one or two good illustrations from the experience of foreign countries. My first

illustration is from the experience of the United States. Mr. Wells, the special commissioner of revenue of the United States in 1867-69, in one of his well-known reports, that for 1869, after stating at one place that he assumes the sums chargeable to smuggling and undervaluation of imports to be counterbalanced by the undervaluation of exports, goes on to say in a footnote: "If we confine "ourselves to the comparison of the values given to imports and "exports respectively, in previous years, this may be considered a "reasonable estimate; but for the last fiscal year it is certainly not "the case. Under the present organisation of the bureau of "statistics, the values given to the exports of the country have "been scrutinised and verified to such an extent as to leave but "little doubt that the statement for last year is substantially "accurate and complete. The fraudulent undervaluation of imports, "however, it is not within the power of such an agency to "prevent."*

A statement like this discloses the existence of a very serious pitfall for us, when we carry our comparisons of United States trade farther back than 1869. It may throw some light perhaps on such questions as the excess of exports from the United States in recent years, which may after all be largely due to the insufficient record of the imports. As regards comparisons before 1869, it is immediately suggested that the apparently slow increase of United States trade between 1860 and 1870 may in part be apparent only, being due to the imperfection of records, and especially to a check on the record of imports through the introduction of the war tariff between the two dates.

The second illustration I shall give is from the last number of the foreign statistical abstract, in which it is noticed that the Austrian Statistical Bureau has lately begun to substitute real for official values, and tables are given showing side by side for four years these official and real values. The subject is of so much interest that I propose, for the sake of reference in our *Journal*, to extract the tables. They will be found in the Appendix (Table I). The following is a summary of the totals:—

[Values in 1,000*l.*'s sterling—000's omitted.]

	Imports.		Exports.	
	Official Values.	Real Values.	Official Values.	Real Values.
	£	£	£	£
1875	55,255,	54,927,	50,447,	55,086,
'76	51,807,	53,428,	50,857,	59,523,
'77	54,666,	55,526,	55,060,	66,660,
'78	59,672,	55,210,	59,970,	65,469,

* Report of Mr. Wells for 1869, pp. xxix to xxxi.

The discrepancies in the two values are perhaps not very serious in the case of the imports, except for the year 1878, but in the case of the exports, they are serious all through, the "real" being 5 millions to 11 millions more than the "official," and the proportion of the discrepancy being from 10 to 20 per cent. In the case of special articles, it will be observed, on referring to the tables, that the discrepancies are still more serious, and that the very first article on the list—animals (except horses)—is a good instance of extreme differences. In the imports of this article the "real" are in almost all cases about twice the "official" values, and in the exports they are about four times the "official" values.

I have a third illustration to give you, derived from French experience. In 1870 the French statistical authorities began to give the countries of origin and destination. It is impossible, therefore, in France to continue from the French accounts any real comparison of French trade with certain foreign countries from a period before 1870. The change of practice throws out all comparisons, and throws out especially any comparison of French trade with England, England being a country of transit to and from France.

The conclusion surely is that in regard to imports and exports, as with most other statistics, comparison with distant periods is not the easy matter it seems. The changes in the data from time to time interpose certain difficulties in the way of comparisons, which must be recognised and met. Besides these foreign instances, I have already given a recent illustration from the change in our own statistics so late as 1870, but the instances might be increased indefinitely. As regards our own statistics especially, the imports were affected by a change from official to computed values in 1854, already referred to, involving quite as serious consequences as those just mentioned in the case of Austria. At a still earlier date also there was a change from official to declared values in the case of the exports, involving large discrepancies.

There is yet another question as regards these data which I must notice before passing on to the next point. The "values" so called when ascertained, whether official, computed, or declared, or in whatever way yet devised they are ascertained, are not identical with the values realised by merchants. They do not profess to be so when they are official or computed values, but even when they are declared by the merchants themselves, they are still different things from the values which the merchant realises. A merchant who declares a particular quantity and value at the time of import may be himself misled. A cargo of wool or grain when it comes to be delivered may turn out less or more than invoiced or estimated by a slight percentage, and the cargo when sold may realise less or more per lb. or cwt.; consequently may realise less or

more in the aggregate than the value in the merchant's declaration. Errors in the estimate of quantities may possibly tend to compensate each other in accounts on a large scale, and such errors are also liable to check by the customs authorities, but the difference between the declared and realised values must remain and will not be so surely compensated. We must always consider then, when we deal with these declared or other values, that they are not necessarily the same as the realised values, but are only the best substitute we can obtain for them, and we must not use them as if they were accurate to a fraction. When an argument is used in which that accuracy must be assumed in order to make it of any value, we may be sure that the argument is bad, and the person who uses it does not know the necessary limitations of statistics.

A *second* cause of difficulty in the data—operating more especially when comparisons are made between the imports and exports of different countries—is to be found in the difference of methods by which the data are obtained. I am referring now especially to the values. The nature of the difficulty has already been glanced at in reference to the changes of system in a particular country itself, but the systems used are still so various in different countries, that the fact requires to be incessantly remembered in any comparisons. The most important foreign countries have none of them adopted our practice of declaring values, which, as regards imports even here, is comparatively recent. In France the values of both imports and exports are computed according to tables of prices established by a commission of values; in Austria values are partly computed and partly official; in other countries there are still official values, modified in part as to imports, where there are *ad valorem* duties, by the declarations of the importers. There is the greatest variety of system. Not only then do the statistics of imports and exports in all countries vary from the values actually realised by the merchants, to which they ought to approximate, but they probably vary in different ways and degrees from the true standard, so that a comparison of the figures of two different countries ought to be made with great caution.* One fact alone will show what is meant. The tendency of our own method is at least to indicate very quickly any great change in the level of prices which may occur. The statistics being made from declarations of value, checked by the daily use of price lists, changes

* How great the difference is, any one who chooses may find out by comparing the exports from England to France, say, as they appear in the English official returns of exports, with the imports into France from England as they appear in the French official returns of imports. See also return of the trade between England and France, according to the official statistics of the respective countries (No. 405, Sess. 1881), in which other difficulties in the comparison of the returns of the two countries are pointed out.

in price act instantaneously, even in the returns as they are issued month by month. But it is not so in France. The monthly returns of quantities are there valued according to the last table established by the commission of values. They do not show quickly, therefore, any change in the level of price. In years when prices are falling they do not fall off as the English monthly returns do, and in years when prices are rising they do not increase so quickly. Again, in countries where official values are used, the variations will depend on quantities far more than on values, and the changes from year to year will consequently be different from those of a country which has declared or computed values. In comparing two countries together, or several countries with each other, or one country with all others or with a group, the differences arising from the original differences of data must be remembered. We must always beware of pushing any conclusions too far.

I need hardly say how much this conclusion strikes at a good deal of reasoning lately about the comparative growth of English foreign trade, and the foreign trade of other countries. A country with official values in a time of falling prices would show steady progress, where a country with declared values, as in the United Kingdom, would show a falling off, although in both countries the real progress might be much the same.

A *third* point to be considered, in using imports and exports statistics, is the periodical variations in price to which commodities are liable. As regards particular articles variations in price do not matter so much if quantities are also given. In showing the progress of wheat exports from the United States for instance, it would be expedient to use the record of quantities and not of values. But when articles come to be grouped, values must be used, as they must also be used in showing aggregate trade, and here variations in price are most important. A low range of values in a particular year will make the aggregate smaller than it would otherwise be, and a high range of values would increase it; and clearly this cause of variation must be allowed for. How it is to be allowed for may be a difficult problem, but the difficulty cannot safely be ignored. When it is considered that the range of difference in the aggregate values of the exports of the United Kingdom, owing to difference of price only, amounted to 30 per cent. between 1873 and 1879, we can easily perceive that no comparison between the two years which omits to take note of the different levels of price, can be of any value. This consideration, by the way, disposes altogether of the fair trade argument, which assumes a decline of the English export trade between 1873 and 1879 corresponding to the decline of value only.

This difference of price may also be most material in comparing

the relative progress of the foreign trade of two different countries. The articles of one country may be affected more by a change in the level of values than the articles of another. If the exports of cotton manufactures, for instance, constitute a larger part of the export trade of the United Kingdom, than they do of the export trade of France, and the price of cotton manufactures has declined greatly, it would be reasonable, other things being equal, to look for a greater apparent reduction in English than in French exports, although perhaps, as the decline may have been mainly due to a decline in the price of the raw material contained in the exports, the falling off in the real exports of France, *i.e.*, the exports of what is strictly the production of the country, may be greater than the falling off in the real exports of England. In other words, not only is the comparison of the trade of the same country in different years not simple but difficult, owing to this question of price, but a comparison of the progress of two foreign countries may be still more complicated by the same cause of variation.

A *fourth* difficulty in using the statistics of imports and exports, so as to show normal progress or retrogression, arises from the disturbing influence of great economic events. A great war, for instance, between two countries, may destroy the foreign trade of one or the other or both, stimulate certain parts of the foreign trades of third countries, necessitate large loans, which may in turn stimulate the foreign exports of the third countries trading, and in general act as a cause of great disturbance to the foreign trade of their neighbours as well as themselves. Such an event, again, as the gold discoveries of California and Australia, disturbs the normal course of trade by causing an immense migration and colonisation. The Lancashire cotton famine, itself one of the secondary consequences of the American civil war, disturbed the trade of the civilised world for probably fifteen years. It stimulated the growth of cotton in countries like India, Egypt, and Brazil; led to a great export of capital to those countries for their farther development; induced a great movement of the precious metals, which in turn stimulated trade in various ways; and finally, as the stimulant was withdrawn, and the cotton trade returned nearly to the old channels in which it ran before 1860, contributed to such incidents as the failure of Alexander Collie in 1875 and the City of Glasgow Bank in 1878, the rottenness disclosed by these failures having been largely due to the excessive investment of capital in the eastern trade in the times of the cotton famine. The abnormal swelling of trade at one time, in consequence of the disturbance of this great event, and its abnormal diminution at another time, when the stimulus is withdrawn, have all to be allowed for of course in extracting the real lessons as to trade progress or the reverse from

imports and exports statistics. The payment of the German indemnity in 1871-73 may be noted as another disturbing event, tending to swell for a time the export trade of France and the countries which lent to France. But it would be needless to enumerate all such causes. Suffice it to note that the history of the last forty years alone comprises the Irish famine, and the exodus to America which followed, the gold discoveries, the Crimean war, the Franco-Austrian war, the American civil war, the Lancashire cotton famine, the Austro-German war of 1866, the Franco-German war of 1871, the Franco-German indemnity, the introduction of gold and demonetisation of silver in Germany, the resumption of specie payments in gold in the United States, and last of all, an unusual run of bad seasons for agriculture in England between 1875 and 1879 inclusive. What a complicated business it must really be to extract from the records of imports and exports of the period any conclusion as to their normal progress, or as to the effect of differences in the economic *régime* of different countries in promoting their foreign trade or general welfare, especially when differences in the volume of imports and exports due to differences of price and changes in the mode of obtaining the returns may also have to be allowed for.

A *fifth* cause of difficulty in appreciating the figures of imports and exports, especially for comparative purposes, arises from the different character intrinsically of the foreign trade of different countries. Admitting that quantities and values are stated in precisely the same way, the figures do not mean the same thing to each country. There are at least two important differences possible, which I shall notice, viz., the differing degrees in which the trade may be one of transit only, and the different amounts of the carrying trade of different countries, as to which there is no precise record of values, yet the outlay on which, by a shipping country, may be as much an "export" as the export of grain from a grain-growing country like the United States, which happens to be exactly recorded.

As regards the degrees in which the foreign trade of different countries may be one of transit only, I think the differences are really most signal. Some of these differences are on the surface. England has on the face of the account a large transit trade, the re-exports, as they are called, being a very large item. Belgium is a still more striking illustration of a large transit trade. But there may be further differences of a vital character which are not on the surface. Any foreign articles once admitted into consumption in a country, and re-made up in any way, and sometimes with little or nothing done to them, are treated, when exported, as exports of native produce and manufactures. You will actually find tea,

coffee, and raw cotton among the exports of domestic produce from France. The result is that the exports, so-called, of domestic produce and manufactures from a country which manufactures largely, are, in part, in the strictest sense of the word, re-exports. The raw material previously imported goes out in a different guise, but it is still the same raw material. To compare the exports of native produce of such a country, with those of a country which does not import raw material to be re-exported in a manufactured form, we ought clearly to deduct from the exports the value of the previously imported raw material which they contain. The explanation specially applies to a country like England, which is a manufacturing country more than any other, as compared with countries like the United States, which re-export in a manufactured form very little of what they import. If a correction were made, probably it would appear that our exports of domestic produce, exclusive of our carrying trade, though nominally larger than those of any other country, are not really much larger than some, and are perhaps, in some cases, exceeded. The United States, for instance, exported in 1879-80 about 170 million pounds' worth of domestic produce and manufactures, hardly any raw material previously imported being included, for the manufactures altogether are only a few million pounds. The United Kingdom, on the other hand, exported nominally, in 1880, 223 million pounds; but from this a large deduction must be made for the value of the previously imported raw material contained in them, perhaps about 60 million pounds; deducting this, the real export of British produce would be only 163 million pounds, as compared with 170 million pounds from the United States. Our exports per head would still be larger than those of the latter country, and a special difference is made by the shipping, which again brings up our total, but the figures may serve to illustrate how different the real may be from the apparent facts. When the real magnitude of the export trade of different countries is compared so as to show their dependence on foreign countries for markets, the point of view here referred to is not to be lost sight of.

A similar rectification is also necessary as regards the imports, in any comparison at least of what is imported for final consumption with the exports of native produce. In some countries the whole imports, less the re-exports, may be treated as imports for final consumption; in the United Kingdom, to arrive at a comparable figure, we must deduct the value of the previously imported raw material contained in the manufactures exported, this raw material being merely the block to which British capital and labour are applied. Applying these considerations to the case of England and other countries, we find that our imports for final consumption are

still by far the largest, but the interval between us and other countries is considerably reduced. Our gross imports last year in round figures were 410 million pounds, but deducting

	£
For re-exports	65 mlns.
„ raw material previously imported, included in manufactures exported	60 „
Total	125 „

we arrive at a sum of 285 million pounds only as the net imports for final consumption in the country. This is a very different figure, though large, from the gross total of 410 million pounds.* It shows that our dependency on foreign countries for supplies, as for a market for our own produce, is really much less than is sometimes supposed. We are no doubt dependent on them for the "blocks" with which we work in making for export, and this is an important fact by itself, while the fact of so much foreign produce going through our hands, though we do not ourselves consume it, has its value in a proper place; but our dependency in these respects is a different thing from our requiring foreign markets where we may sell what we produce, in order to buy what we finally consume. In this respect foreign countries are more nearly on an equality with us than is sometimes supposed.

Another important conclusion is to be drawn from this consideration. The exports of a manufacturing country may be nominally affected by a change in the value of the previously imported raw material, although there is no real change in the native produce exported, or when the real change may be the opposite of the nominal one. Say that a fourth of the exports consists of previously imported raw material, then a decline of 50 per cent. in the value of the raw material would produce a decline of $12\frac{1}{2}$ per cent. in the aggregate exports, which would be entirely nominal. If at such a time the exports were apparently stationary, the real fact would be that they had increased $12\frac{1}{2}$ per cent., or rather about 17 per cent., allowing that the increase really takes place on three-fourths only of the nominal total. The influence of changes of price has already been referred to generally, but the special influence of this factor on the exports of manufacturing countries appears also worthy of attention. It is by no means an immaterial point. The apparent falling off in the exports of British produce and manufactures between 1873 and 1879 is to

* This last figure, it may be explained, is itself, strictly speaking, too small, not including the transhipment trade and bullion, which ought, I think, to be included, and which would bring the total up to 450 million pounds; the imports for final consumption being, however, as stated in the text, only about 285 million pounds.

be accounted for largely by a reduction merely in the price of the raw cotton—the block to which our industry was applied—contained in the manufactures.* To talk of the decline between 1873 and 1879 without taking note of such facts would clearly be to mistake show for substance. No wonder figures are so often said to be capable of proving anything, when pitfalls like these, which have seldom even been referred to in past discussions, are in the way.

With regard to shipping, the facts may be more simply stated. A country with a large carrying trade may export little in the shape of commodities, and yet be to all intents and purposes a considerable exporter. Its outlay in wages and provisions for ships' crews, in equipping and repairing ships, in insurance and renewals, and the profits it earns, are all parts of its export as much as if the export were embodied and stored up in a commodity. In any complete account of the foreign trade, therefore, the carrying done by carrying countries, with analogous charges, ought to be included; otherwise no proper comparison is possible with countries which have a small shipowning business. The so-called foreign trade in the one case is the whole foreign trade, in the other it is only part of the whole.

I shall have to make use of this principle afterwards in dealing with the question of the balance of trade; but it is enough to state it, I hope, to prove its reasonableness. To put the point in a concrete shape, the imports and exports statistics of a shipowning country like England do not show its foreign trade, as the imports and exports show the foreign trade of the United States, which has only a very small shipowning business.

That all these questions are substantial and not formal, may be shown by a single example of how much our view of the foreign trade of the United States as compared with that of England would be altered by taking account of them. See, it is said, how much of American goods the United Kingdom imports, and how little of British goods America imports. This difference, I confess, would not, in my opinion, be at all material if the real facts were the same as the apparent ones. Trade is well known to be very often triangular; we may buy from America, and send goods elsewhere on American account, though not directly to America; but the statement is itself untrue if we examine the facts carefully. No doubt we record an import of 107 million pounds from the United States, and only record a return of 38 million pounds, showing an excess of imports over our exports amounting to 69 million pounds, which it is supposed the Americans prevent us by their tariff from sending to them. But people forget first that our trade is largely one of transit both directly and

* See Report on Prices of Imports and Exports, C–3079, Sess. 1881.

indirectly through our manufactures. Among the articles we import from the United States there was 31,784,000*l.* worth of raw cotton alone in 1880, of which directly as a re-export, and indirectly through our manufactures, we would send away at least four-fifths or 26 million pounds. Why should we expect the United States to take goods directly from us for this amount? Surely the countries which ultimately get the raw cotton directly or indirectly are the countries which should pay, and they may do so in part directly as well as through our agency, our only share being a commission on the whole transaction. The second fact is that we export to America in the form of carrying goods on American account, and this item probably amounts at the present time to 16 million pounds a year. These two sums together—what we send away elsewhere of raw cotton alone among articles we have imported from America, and what we export to America in the shape of doing carrying work for her—go a long way towards extinguishing the apparent balance against us on the import and export account. They amount together to 42 million pounds, thus reducing the apparent balance from 69 million pounds to 27 million pounds. This is a much smaller sum than might at first be expected from the bare record of so-called imports and exports, and shows how short a way the latter figures carry us by themselves. As already stated, it is of no consequence whether there is an exact balance or not, but the actual facts should be well understood, and they cannot be understood without appreciating the totally different character of the foreign trade of the two countries.

The above, let me add, are not the only points of difficulty in the study and use of import and export statistics which ought to be considered. I have not attempted to make an exhaustive catalogue. I have simply noticed a few points which have lately been brought under my notice as material or which recent controversies have suggested. They are enough to show, however, that there is no royal road to this branch of learning any more than to other branches. There is a great deal in the study, and patience and labour are required of all who would enter into the field. That there are yet more difficulties will be apparent when we come to the special applications of these statistics which I have thought it would be useful to investigate, viz., their bearing on the question of the balance of trade or balance of indebtedness between countries, and their bearing on the points in dispute in the fair-trade controversy. We can show not only by a statement of principles, but by the actual steps necessary in applying the statistics, how much consideration is required in the application of figures which appear very simple, and how difficult it is to arrive at correct views. To prevent misunderstanding let me only add that,

while pointing out the difficulties of the study, I am saying nothing to imply any doubt of conclusions which are arrived at after a sufficient study of all the facts. There are conclusions in all studies which it is hard for the unlearned to follow, but they are none the less certain to those who care to learn.

III.—*Balance of Trade and Balance of Indebtedness. The Generality of the Excess of Imports.*

The first special question I propose to discuss is the application of the import and export statistics to the problem of the balance of trade, and the connected problem of the balance of indebtedness of a country, the case I propose more particularly to investigate being that of the United Kingdom. Importance has come to be attached to the question in this way. The imports into the United Kingdom, as recorded, have in late years shown a great excess over the exports from the United Kingdom, as recorded. By many this excess is treated as a trade balance against this country, and without much ado there is also an assumption that the country is running into debt. We are buying, it is thought, more than we can pay for, and we can only pay by an export of securities. The conclusion itself seems so extravagant to anyone who watches the constant issues of foreign securities on the London Stock Exchange, or the constant lending by private capitalists to foreign countries, which hardly ever ceases, that for one, I have never thought it worth while to discuss it. A statement was actually brought me on one occasion showing that the country had become indebted to foreigners in twenty years to the extent of 1,000 million pounds, which had never been paid, and which was all represented by bills, the non-payment of which would bring about, some day, a financial collapse. The writer was plainly unaware that the whole amount of bills current at one time in the country, both in home and foreign trade, was under 1,000 million pounds, that the amount has not been increasing lately, and that the foreign bills are only about a third or fourth part; and I think also he was unaware that in the foreign trade it is English capitalists who give credit to foreign nations, and not foreign capitalists who give credit to England. Still the statements as to the excess of imports have acquired a certain amount of currency, and we may see how far they are really countenanced by import and export statistics.

The general statement of the difficulties of the inquiry already made has somewhat cleared the ground. We are prepared to see at the very threshold that the imports and exports themselves are not exact to a fraction. There may be an error in the data of 1 or 2 per cent., and the values may also differ from the values realised by merchants. Suppose there is a difference of 2 per cent. only,

and that it acts on imports and exports in opposite directions, increasing the former and diminishing the latter, we have a difference at once of about 15 million pounds in the so-called excess of imports. Our imports, bullion and transhipment included, amount to nearly 450 million pounds; our exports, bullion and transhipment also included, to over 300 million pounds, on all of which 2 per cent. comes to the sum of 15 million pounds as stated. The balance of probabilities is perhaps against any variation of such great magnitude from the amounts actually realised by merchants, while the variation may be in the opposite direction, tending to swell the excess of imports; but the great effect of what is really a slight percentage should warn us against reasoning too finely. Even the apparent amount by which the recorded imports exceed the recorded exports may be subject to great reduction.

The variations in the level of prices from year to year are also most material in such a question. A sudden rise or fall of 5 per cent. in the average price of the exports beyond the corresponding rise or fall in the average price of the imports, would alter momentarily the excess of imports to a most material extent, without implying any real changes in the general conditions of our trade. Similarly any of the great disturbing economic events referred to, two of which have at least affected business during the last few years, viz., the resumption of specie payments in America, and the bad harvests in western Europe, might largely alter for a moment the balance of trade. Last, and more important, the fact of our being a shipowning country, and doing other duties in connection with the foreign trade of the world, causes what is really a large export of the produce of our capital and labour in an unrecorded form, and there can be no commencement even of a discussion of the facts without a proper allowance for this export; while the trade balance itself, when properly ascertained, only remains to form part of the general account of international transactions, especially when the country concerned is a country like the United Kingdom, having investments abroad in endless number and variety. We see at once from these considerations that even to ascertain the exact excess of apparent imports over apparent exports is no easy matter; that this excess is different from the real excess in the case of a country like the United Kingdom, which has a large shipowning business; and that the excess when ascertained is only one item in an international account. We are far enough already from the rough and ready handling which the excess of imports receives from writers in the "Quarterly Review" and the like authorities.

Grappling now with the subject more directly, what I have first to suggest, in accordance with a sound maxim of statistical inves-

tigation, is an inquiry how far the excess of imports is a new or not a general fact. There is little use in discussing it at all until we look about us. The question of the generality of the fact is very soon settled. An excess of imports is a very common thing indeed. I have only to refer you to the Appendix No. II on the point. In this I have had taken out for a late year in each case, usually 1878 or 1879, the imports and exports of every country in the world: there is hardly an exception, I think. The result is that in forty-five instances there is an excess of imports, and in forty-two instances an excess of exports. I say nothing at present of amounts in each case: it is possible that the United Kingdom is specially unfortunate on account of the magnitude of the case. It is clear, however, that the mere fact of excess of imports is a very general one in the experience of nations. We do not stand alone.

Another general fact which appears is that, taken altogether, the column of imports is in excess of the column of exports. The totals are:—

	£
Imports	1,768 mlns.
Exports	1,606 „
Excess of imports	162 „

This fact is surely very significant. It is the same goods substantially which are dealt with in both cases, the fact that it is not the same year which is dealt with in all cases making no sensible difference when so many countries are dealt with and the years are selected without any bias. But although it is the same goods that are dealt with, they are represented in the one column as 162 million pounds more than in the other column. This of itself suggests, I think, a natural reason for an excess of imports. A difference like this can only be due to a common cause, and that cause obviously is the cost of conveyance; the imports, being valued at the place of arrival, include in all the accounts the cost of conveyance; the exports being valued at the place of departure, do not include that cost. Hence the difference between the two columns. In so general an account, putting all the countries of the world together, I can suggest no other cause of difference. Of course, after what I have already said, you will not expect me to put forward the figure as absolutely exact. We know too little of the methods followed in more than eighty countries to be sure that the values are comparable one with another. Still the resulting difference, being in accordance with reasonable expectation, is evidently to be relied upon as a fact, though we cannot state a figure which pretends to any exactness.

It follows also that, as there is and must be an excess of imports in the aggregate, some particular countries are entitled to the excess.

These must also be the carrying countries. Freight must be the chief matter, but the difference cannot be wholly freight, as the figures include goods which have passed from country to country by land, though not a large amount in proportion, as well as goods which have passed by sea. There are also other charges on the conveyance of goods besides the freight paid to ship-owners, and all must be included in the difference here stated, or the true figure which it approximately represents. Still whoever carries, in proportion to what he does carry, or rather in proportion to the outlay he contributes for the carrying, and the profit he thereby earns, must be entitled to a corresponding amount of imports. If the account were exact, and there were no other cause for an excess of imports or exports in particular cases, the table would show not only what the excess of imports was in the aggregate, but what were the carrying nations and how much each received. The table, however, does not show this. No doubt the countries with an excess of imports are largely carrying nations: the United Kingdom, Norway, Denmark, Germany, Holland, France, Italy; but there are other countries with an excess of imports, while in some cases, perhaps, the excess is not so large as that to which the share of the country concerned in the carrying trade would apparently entitle it. This suggests obviously that besides the cause which produces an excess of imports in the aggregate, the excess varies in the case of particular countries, or becomes even an excess of exports, owing to another cause. That cause I have to suggest is that countries are either borrowing or lending in their international transactions, or that some are receiving while others are paying interest. The result is that if we add the excesses of imports on the one side and put against them the excesses of the exports on the other, the aggregate excesses of imports are found to be 286 millions, and the aggregate excesses of exports 124 millions, the difference being the net excess of imports already stated. The excesses of exports in certain cases amounting to 124 millions, would also imply that in the international transactions of the world, unless the figure should be modified by including the bullion, as we ought to do for this purpose, but which I have found it impossible to do in all cases, a sum of that amount was passed as the balance of the various loan and interest transactions of the world. The total amounts lent and the total amounts paid for interest may both have been larger, and there is nothing to indicate the amounts, but of the fact of a balance having to be passed, there can be no question. While we conclude then, from the general fact of an excess of imports, that it corresponds to the cost of conveyance in international trade, it is quite possible that the countries entitled to share in it may show a smaller excess

than they would otherwise do through their lending to foreign countries, or may show a larger excess through their receiving interest or borrowing on balance, while, on the contrary, non-carrying nations may show a small excess of exports, or even an excess of imports, in consequence of the balance of their other transactions. The figures in the case of each country are no guide to the state of its general account with other nations.

It is to be observed, however, that there is a geographical distribution to some extent of the countries having an excess of imports or of exports respectively. The nations in the tables are classified geographically, with a cross division for the British empire and for the rest of the world, and the result is that while Europe shows an enormous excess of imports, viz. :—

	£
United Kingdom and Malta	112 mlns.
Other countries of Europe	142 „
Total	254 „

the other quarters of the world show on the whole an excess of exports, viz. :—

	Excess of	
	Imports.	Exports.
	Mlns £	Mlns. £
Africa—		
British empire	4	—
Other countries	—	4
Asia—		
British empire	—	19
Other countries	—	2
Australasia—		
British empire	6	—
Other countries	—	—
America and West Indies—		
British empire	1	—
Other countries	—	78
	11	103
Deduct	—	11
Excess of exports	—	92

The figures at least suggest, I think, that it is the old countries —the homes of capital—which have to receive interest, and the new countries—principally the United States—which have to pay it. Certainly no inference can be drawn to the effect that it is the countries with an excess of exports which are the most prosperous,

the list comprising Peru and other South American States, which have lately been passing through the most serious calamities. The most singular fact disclosed by the table is perhaps the excess of imports in the case of the Australian colonies; but this is partly to be accounted for, I believe, by the fact of the continuous lending of this country to Australasia, which has been going on for many years past. Its natural place would have been with America and the new countries generally. The facts as to the Cape Colony give rise to a similar remark.

I shall have to return to the figures shortly in reference to the question of the charges for conveyance to which the United Kingdom is entitled; but I pass on to remark that as the fact of an excess of imports is general, it is also by no means new, either in the case of the United Kingdom or of the world generally. With regard to the United Kingdom, the fact is tolerably well known; but to make this paper complete, I have included in the Appendix (Table III) a statement of what the excess has been since 1854. The following is a summary of this table in three years' periods:—

Excess of Imports, and Proportion to Total Imports and Exports, including Bullion and Specie, 1854-80.

[In millions of pounds.]

	Total Imports and Exports.*	Excess of Imports.	
		Amount.*	Per Cent. of Imports and Exports.
	£	£	
1854–56	330	37	11·2
'57–59	386	31	8·0
'60–62	432	53	12·3
'63–65	523	60	11·5
'66–68	566	67	11·8
'69–71	617	61	10·0
'72–74	732	61	8·3
'75–77	713	121	17·0
'78–80	690	119	17·2

* Averages of three years.

Thus we have always had an excess of imports into this country. Of late years it has been larger in amount and in proportion to the imports and exports recorded than formerly, but the only novelty to be inquired into is clearly the increase of the excess: (1) whether it is apparent or real, a most important inquiry, as the mode of valuing the imports, we have seen, was changed in 1870, and in 1871 there is a sudden and remarkable increase in the imports, and a still more remarkable increase in the re-exports; and (2) whether there are any circumstances to account for a real increase of the

excess of imports, such as an unusual diminution of our current lending to foreign countries, or an unusual increase of shipowning business making our unrecorded exports unusually large. At present I do no more than suggest these answers, the main point to be considered being that the excess of imports, and that on a very large scale in proportion to our whole foreign trade, is itself no novelty.

The excess of imports, as I have stated, is also no novelty in the aggregate trade of the world. On this head I have to quote the figures given by Dr. Von Neumann-Spallart,* to whom I am indebted for some of the figures in the second table of the Appendix, viz.:—

Imports and Exports of the World.

[In millions sterling, converting the mark at 20 per £.]

	Imports.	Exports.	Excess of Imports.
	£	£	£
1867–68	1,165	1,045	120
'69–70	1,266	1,100	166
'72–73	1,554	1,334	220
'74–75	1,450	1,289	161
'76	1,493	1,296	197
'78	1,508	1,359	149
'79	1,571	1,355	216

Thus an excess of imports in the aggregate trade of the world is a permanent fact. There is nothing new in it. There is also some proportion between the aggregate trade and the excess of imports. The more trade there is the more charges for conveyance, though the progression is of course not quite constant, and the figures themselves are of course somewhat incomplete, which makes it difficult to exhibit a regular progress from year to year.†

IV.—*Subject continued: How the Excess of Imports into the United Kingdom is to be accounted for.*

Having thus brought out the facts of the generality and want of novelty in the excess of imports, and having suggested as a necessary cause of it the cost of conveyance between countries which must always exist, and as a contributing cause the settlements of international accounts through the remittance of loans

* Uebersichten der Weltwirthschaft, von Dr. F. X. von Neumann-Spallart. Jahrgang 1880. Stuttgart. Verlag von Julius Maier. 1881. (See p. 360.)

† It will be observed that the annual amounts here are in no case so large as the annual amount in Table II of the Appendix. Some of the figures in the latter table, however, are for a year later than 1879, and the figures I have used also include the bullion and specie as much as possible, which are not included, apparently, in Dr. Spallart's figures.

or interest on money previously borrowed, I propose now to inquire more particularly with reference to the United Kingdom how the excess is to be accounted for.

How much, to begin with, is annually due to us as a shipowning and carrying nation? As we have seen, there is no reason why the actual excess of imports, in the case of a shipowning nation, should correspond to the sum it earns in the carrying trade; the actual excess may be less or more than that sum; but the sum is nevertheless an item in the account just as much as the so-called exports on the one side or the imports on the other. I have to call attention to the words shipowning and carrying. According to the definition already given, the question is what is the amount of our contribution to the carrying of the world's goods, and though it is mainly a shipowner's question, it is not wholly so.*

Replying to this question, I propose to take the facts as to shipowning first, and to use first in a general view of the subject the excess of imports already shown in the aggregate trade of the world. Assuming this excess or 162 million pounds to represent approximately the cost of conveyance, how much of it should fall to the share of the United Kingdom? I have to suggest first of all, for reasons to be given afterwards, that about 32 million pounds of the amount, or rather less than 2 per cent. on the aggregate trade, represent miscellaneous charges and commissions, which all form part of the cost of conveyance, and of which the English share may be put at one-half, or 16 million pounds. Deducting this 32 million pounds, the sum of 130 million pounds is left as the amount due for freight. How much should fall to the share of England? It would also be natural in reply to compare the mercantile tonnage of England with the tonnage of the rest of the world, and divide the 130 million pounds between them in proportion. For all practical purposes England's proportion may be put at something like 55 per cent.,† and assuming this proportion, the division would be as follows:—

* The following propositions appear to cover the various cases of an excess of imports or exports arising in connection with carrying operations:—

1. A non-carrying nation, in the absence of borrowing or lending, ought to show in its accounts an equality between imports at the place of arrival, and exports at the place of departure.

2. A nation carrying half its foreign trade ought to have an excess of imports equal to the cost of carrying the goods one way; and so in proportion for whatever its contribution to carrying may be.

3. A nation carrying its whole foreign trade will have an excess of imports equal to the cost of carrying the goods both ways.

4. A nation carrying for others is entitled, in addition, to an excess of imports equal to the freight earned, less any expenses incurred abroad. Any nation contributing to carriage will also have something to receive.

† This is a rough deduction from the tables in the return, "Progress of British

	Per Cent.	Proportion.
		Mlns. £
United Kingdom	55	71½
Other countries	45	58½
Total	—	130

The sum of 71½ millions sterling is certainly enormous. Still, the figures, whatever they may be worth, are not cooked in any way. I have simply taken the excess of imports as I have found it, and made a proper deduction as I think, so as to leave only what is due to freight, and I have then merely divided this freight between England and other countries in proportion to their tonnage. As regards the actual amount of this freight, it cannot be called extravagant. On the total imports of the world, as shown in Table II of the Appendix, it amounts to a charge of 7½ per cent. only, and on the total tonnage of the world, sailing and steam together, it would show a gross earning of no more than 8*l.* per ton.

As regards the division between England and other countries, it would perhaps be necessary to make a correction for the amount of outlay by English ships in foreign ports in excess of the outlay by foreign ships in English ports, but the outlay of this sort, I believe, from a consideration of the other outlays in earning freight, cannot exceed about a sixth part of the total earnings. Deducting a sixth from the above sum of 71½ millions, would leave about 60 millions

" Merchant Shipping," No. 125, Sess. 1881. The calculation (for 1879) in millions " of tons is:—

	Sailing.	Steam.		Total.	Per Cent. of Total.
		Amount.	Equivalent in Sailing Tons.		
Tonnage of—					
United Kingdom	4·0	2·5	10·0	14·0	50
Rest of British empire	2·0	0·2	0·8	2·8	9
	6·0	2·7	10·8	16·8	59
Foreign countries.....	7·2	1·1	4·4	11·6	41
Total	13·2	3·8	15·2	28·4	100

Thus the proportion of ships belonging to the United Kingdom alone is 50 per cent., and allowing a certain proportion of colonial ships to be owned in the United Kingdom, the figure of 55 per cent. in the text seems near the mark. Since 1879 our proportion has largely increased.

as the sum due to the United Kingdom for freight. This would be our share of the 130 millions.

Adding together the 60 millions for freights and the 16 millions for miscellaneous charges and commissions, we arrive at a total of 76 millions, as the share of the above 162 millions, for cost of international conveyance annually due to the United Kingdom at the present time.

These figures are, of course, too uncertain to be relied upon by themselves, but they are not without corroboration. I have first to refer to various authorities who have dealt especially with the amounts of freight earned in the direct trade of the United Kingdom. Mr. Bourne, in a paper read before the Society, and printed No. 3 of the volume already referred to, was one of the first to grapple with the problem. His method, I believe, was incomplete, but some of his statements were most interesting. One of them (p. 63) is to the effect that 11 per cent. on the value of our imports would be a fair average allowance for freight. The imports are now, roughly speaking, over 400 millions a year, on which 11 per cent. would be 44 millions, and of this 44 millions the English share, dividing the sum in the proportion of the entries of English and foreign ships—70 per cent. to 30 per cent.—would be very nearly 31 millions. Similarly Mr. Bourne gives the freight on exports as 20*s.* per ton for sailing vessels, and 30*s.* per ton for steamers, at which rates in 1880, the clearances of British sailing vessels being 3,182,000 tons, and of steamers 15,685,000 tons, the freight on exports in British bottoms would be nearly 27 millions. The total for imports and exports is 58 millions. Adding a sum for freights earned by British ships in the indirect trade, which must be enormous, and again making a deduction for outlays in foreign ports, we should still, on this showing, get well on to the figure of 60 millions, if not beyond it.

I must, of course, allow that Mr. Bourne was writing several years ago, and freights are a variable item, but I do not believe that one year with another they have fallen permanently below the level of price he quoted. Some freights have fallen, but not the run of freights to any material extent. There has been, in truth, no large margin for a fall in freights, the cost of working being itself from 70 to 90 per cent. of the income, and the absolute outlay per ton, though it tends to diminish with the increasing size of vessels, not having diminished very greatly from the time Mr. Bourne wrote.

Mr. Newmarch again, in a paper read to this Society in 1878,* proposes to deduct 5 per cent. from the imports and add 10 per cent. to the exports for all charges of conveyance. These amounts on our present trade would come to about 50 millions. Mr. Newmarch

* Statistical Society's *Journal*, vol. xli, pp. 218—20.

does not indicate what he thinks the other charges as distinguished from freight would be, and does not enter into the question of outlays in foreign ports or of work done by British vessels for foreign countries. The sum of 50 millions which he actually arrives at for the direct trade of the United Kingdom alone appears to corroborate the notion that the sum of 60 millions for the whole earnings of our mercantile fleet, less all outlays abroad, is not wide of the mark.

In the same paper Mr. Newmarch quotes a letter of Mr. McKay, of Liverpool, who estimates the freights earned in British bottoms at 30*s.* per ton for imports and 20*s.* per ton for exports.* These rates on the tonnage of 1880, converting the net register ton into gross tons in the proportion of two-thirds to 1, would give:—

	£
Imports	37 mlns.
Exports	27 „
Total	64 „

Again, there is no mention of any outlays abroad, but the figures amply support those already stated. The sum these authorities deal with, it must always be remembered, is for the direct trade of the United Kingdom alone; and the figure of 60 millions already given represents our whole earnings from freight, less actual outlays abroad in earning it.

Quite lately I have obtained a calculation from a ship owning friend (whom I shall call A, as I have many other facts from shipowners, whose names I am not at liberty to mention, and to whom I shall assign the letters of the alphabet), with reference to average freights at the present time. His calculation is that on the weights of goods actually imported and exported in the American trade, freights come to about 27*s.* 6*d.* and 20*s.* respectively. It is not quite clear what these weights are, or whether they would be represented by the tonnages entered and cleared; but assuming the latter to be the case, and converting the net registered tons into gross tons, as is done above, and assuming also that the American trade is a good average of the whole foreign trade, as I believe we may do, we get the following figures:—

	£
Imports	34 mlns.
Exports	27 „
Total	61 „

This is substantially the same figure as that arrived at on

* I am unable to identify the tonnage actually quoted by Mr. McKay.

Mr. McKay's calculation.* It manifestly supports the conclusion that 60 millions at least is earned by our shipping, after deducting all outlays abroad, in the direct and indirect trades.

I propose now, however, to deal more directly with the matter. The tonnage of the British mercantile fleet being known, how much per ton according to direct evidence, does the sailing ship and the steamer earn on the average, and how much ought to be the deduction for outlay abroad? I have many figures on this head to submit to you, and I must crave your patience on account of the very great importance of the subject.

I have first to call your attention to Appendix No. IV, in which there are certain tables extracted from the "Statist" newspaper of 26th November last. These tables summarise the accounts of our principal joint stock shipping companies in a form which was partly of my own suggestion, with a view to the present paper, though the tables themselves are not my own work, but the work of a gentleman already well known to many of you, Mr. Wynnard Hooper, whose analysis, I think, does him great credit. The points in this statement to which I desire to call attention are these:—

a. The capital value of the fleets of eight companies, including some of the largest and best, but also including one or two of a second class, comes out on the average at 16*l.* 13*s.* per ton gross, which is not less than about 25*l.* per ton net, taking the net as two-thirds of the gross, and the real proportion being less. The range of value is from 13*l.* 2*s.* to 18*l.* 12*s.* per ton gross, or from 19*l.* 13*s.* to 27*l.* 16*s.* per net registered ton. These are much lower values in all cases, I believe, than the ships could be built for. They are not extreme values.

b. The gross income of six of the above companies, representing fairly well the average of the nine, works out at 14*l.* 12*s.* per ton gross, or about 22*l.* per net registered ton. This is a percentage on the value of about 88 per cent. The percentage on the value in each case is:—

	Per Cent.
Peninsular and Oriental	91
Pacific Steam	92
Royal Mail	70
Cunard	100
General Steam	84
Mercantile Steamship	59

* It is hardly worth while cumbering the paper with the details, but I have made a calculation of the actual weights of goods imported and exported, and these charges for freights would bring out a sum on such weights of 50 million pounds. I have also to call attention, on this head, to Appendix X, showing the amount of weights carried in our direct foreign trade, as far as weights can be stated.

Thus the lowest value per net registered ton is about 20*l.* and the lowest proportion of gross earnings about 60 per cent.

c. The proportion of expenditure to gross income works out as follows :—

	Per Cent.		Per Cent.
Peninsular and Oriental	92·4	Cunard	83·9
Pacific Steam	92·6	General Steam	91·1
Royal Mail	99·3	Mercantile Steamship	87·7

The average of the six is about 91 per cent., and the lowest is about 84 per cent. As the gross earnings are a large percentage of the value, so the gross outlay is also a large proportion of the gross earnings.

The outlay per ton gross amounts to 13*l.* 7*s.* on the average of the six companies, equal to about 20*l.* per net registered ton. The value being 25*l.*, this shows an average outlay in proportion to the value of 80 per cent.

d. In the case of three of the principal companies practically little more than half the gross earnings are from freights, but they earn from freights alone 2,116,000*l.*, or about 8*l.* gross ton, equal to about 12*l.* per net registered ton. In any case a part of their income from passengers, probably the larger part, being for the conveyance of foreigners, or of persons travelling on foreign account, has the same effect on the international account as a charge for conveyance of goods. It is a debit to foreign nations, and a credit to the shipowner in this country.

e. The average expenditure per ton is stated under several heads for each of the three principal companies, and is in all very nearly alike, the mean being as follows :—

	Per Ton Gross.	Per Ton Register.
	£ *s.*	£ *s.*
Coal	2 12	3 18
Pay of crews	1 10	2 5
Provisions	1 8	2 2
Repairs and renewals	1 12	2 8
Insurance and depreciation	2 2	3 3
Other expenses	4 8	6 12
	13 12	20 8

I postpone drawing any deductions from the figures, as I have other figures to give, but I may note before passing that the figures as to the eight companies comprise 442,000 tons gross of shipping; the figures as to six, 400,000 tons; and the figures as to three, 278,000 tons. A considerable part of the steam mercantile fleet is thus represented.

I have next to direct attention to the series of statements respecting different classes of ships in Appendix No. V. The statement B is exactly parallel, it will be observed, to the statements above quoted, relating to the leading companies which publish their accounts, with the differences that only the outlay is stated, and that the outlay abroad is distinguished from the outlay at home. The general result is that on a somewhat higher valuation, the steamers being valued at 20*l.* per ton gross, or 31*l.* per ton net register, the outlay is also about 65 to 70 per cent. of the value, or 21·88*l.* per registered ton in the one case and 20·34*l.* in the other case. The amount spent per ton on wages, coal, and other items is less than in the case of the companies which publish their accounts, but the total outlay is swollen by a large charge for depreciation.

With regard to the distribution of the expenses between this country and abroad, the point to note seems to be that the total abroad in the one case is 7·70*l.* per ton and in the other 7·60*l.* per ton, or about 35 per cent. of the total outlay. The amount is chiefly for port expenses and Suez Canal expenses.

The next statement, C, also relates to a steamer, but of a different class from the above, the value being 19*l.* only per net registered ton and the gross outlay 14*l.* 3*s.* per ton. The wages are again much lower than in the case of the first-class steamers, but the outlay for coal is as much as 5*l.* per ton.

The next statement, D, is also a steamer—a cargo boat—the actual value not being stated, but apparently belonging to a class which is valued at 25*l.* per ton. Here the outlay is 14*l.* 13*s.* 7*d.* per ton, and the wages are as much as 2*l.* 17*s.* 6*d.* per ton.

E. Is another steamer, a plain cargo boat, valued at 25*l.* per ton, with an annual outlay of 11*l.* 2*s.* per ton, including only 1*l.* 10*s.* per ton for wages.

F. Is another cargo boat, value about 22*l.* per ton. Here the gross earnings are stated, and amount to about 17*l.* per ton, nearly 80 per cent. of the value. Of the 17*l.* per ton earned, the outlay abroad is 7*l.* per ton, or between a half and a third.

G. Contains an account of four steamers in the Mediterranean trade, valued at 15*l.* per gross ton, or 22*l.* net, whose average outlay amounts to about 10*l.* 16*s.* per ton gross, equal to about 16*l.* per ton net. The results are in fact much the same as for F, though the payments abroad do not appear so large.

H. Is a record of four steamers engaged in the coasting trade or short voyages. Their average value is also about 15*l.* per gross ton, or 22*l.* per ton net, and the average outlay is about 10*l.* 10*s.* per gross ton, or 15*l.* 15*s.* per net ton.

The next records, I, K, and L, all relate to sailing ships: I shows an outlay of 5*l.* 17*s.* per net registered ton; K an outlay of

6*l.* 1*s.* 8*d.*; and L, which gives an average of no fewer than fifty vessels engaged in miscellaneous trades, an average outlay of about 5*l.* 6*s.* per net registered ton. The values in I and K are 15*l.* and 14*l.* respectively, and in L about 9*l.* 10*s.* per ton. In the case of L the statement is accompanied by a private note, indicating that the profit is about 1*l.* 16*s.* per ton, that is about one-third of the outlay. This would make the gross earnings over 7*l.* per ton, and as the outlay abroad is 1*l.* 10*s.* per ton, the gross earning receivable at home would be about 5*l.* 10*s.* per ton.

Combining all the information from the various sources, what it seems to point to in the case of steamers is first a gross outlay, ranging from about 11*l.* or 12*l.* up to 20*l.* and even more, per net registered ton, this gross outlay being also about 80 or 90 per cent. of the income, which would thus range from about 15*l.* to 22*l.* per ton. In no case, apparently, not even that of the lowest collier, can the gross income be put at less than about 15*l.* per ton. The subjoined table brings out this clearly:—

	Gross Income where Stated, per Ton.	Outlay per Ton.	
		Amount.	Per Cent. of Income.
	£	£ *s.* *d.*	
Six steamers in "Statist"	22	20 – –	88
Statement B	—	21 – –	—
„ C	—	14 3 –	—
„ D	—	14 13 7	—
„ E	—	11 2 –	—
„ F	17	12 – –	70
„ G	—	16 – –	—
„ H	—	15 15 –	—

Thus, in any case where the income is mentioned at all, even in the case of an ordinary steamer spending no more than 12*l.* per ton, there is no lower sum mentioned than 17*l.* per ton. Assuming that in all the other cases the percentage of expenses is also high, and not less than 80 per cent. of the income, we should have an income in all except the lowest class amounting to about 16*l.* to 18*l.* per ton and upwards.

I shall propose then to place the earnings of our steam fleet on home account, inclusive of the earnings from passengers, at not less than 15*l.* per ton, which would allow for expenditure in foreign

ports. This on the tonnage registered at the end of 1880, viz., 2,723,000 tons, would come to about 41 million pounds.

With regard to the sailing vessels, the problem seems more simple. The average earnings may be put at not less than 7*l.* per ton, the outlay being 5*l.* 6*s.* per ton. The sum of 7*l.* per ton on a fleet of 3,851,000 tons comes to about 27 million pounds, from which about 1*l.* 10*s.* per ton, or say 6 million pounds, would fall to be deducted for outlay in foreign ports, leaving about 21 million pounds as earned on home account. The two sums together amount to 62 million pounds, which is not far from the sum of 60 million pounds already arrived at. A certain deduction would of course have to be made from this calculation for the earnings of the fleet engaged purely in coasting, but not sufficient, I think, to alter the round figure of 60 million pounds.

As a rough calculation, I would suggest that 5*l.* per ton from sailing ships, and 15*l.* per ton from steamers, will give us an approximate figure for the foreign earnings of our mercantile fleet, making all corrections for outlays abroad. If there is any over-estimate, there would be a set off to some extent in the outlay on foreign vessels in our own ports.

My own impression is that the figure is under and not over the mark. The above account deals only with vessels on the register of the United Kingdom, and known to be employed in the foreign trade. There are many vessels, as already hinted, on colonial registers, or which have been lost sight of, which are really British owned, and which bring an income to British owners. We may be sure that there are considerable sums beyond what has been stated to be brought to account.

It will serve to make clear to us what all this trade means, besides confirming the conclusion to the income derived from it to the United Kingdom, if we farther inquire what the share of the gross earnings which comes to us is composed of. What are the principal items? The information in the Appendices IV and V bears a good deal on this point, and may be confirmed in various ways.

The principal items are clearly—wages, victualling, insurance, repairs, renewals and depreciation, and profit. I have to submit the following table, deduced from the accounts annexed, always premising that the figures show only what is earned for the United Kingdom:—

	Per Ton.			Total for Tonnage of United Kingdom.
	£	*s.*	*d.*	Mlns. £
Sailing Vessels—				
Wages	1	1	–	4
Victualling	–	11	–	2
Insurance, 7½ per cent. on mean value of 10*l.* per ton	–	15	–	3
Repairs, renewal, and depreciation, 12½ per cent. on mean value of 10*l.* per ton	1	5	–	5
Profit, 12½ per cent.	1	5	–	5
Total		—		19
Steamers—				
Wages	2	–	–	5½
Provisions	1	10	–	4½
Insurance, 7½ per cent. on mean value of 25*l.* per ton	1	17	6	5
Repairs, renewals, and depreciation 15 per cent. on mean value of 25*l.* per ton	3	15	–	10
Profit, 12½ per cent.	3	2	6	8½
Total		—		33½

Summary.

	Sailing Vessels.	Steamers.	Total.
	Mlns. £	Mlns. £	Mlns. £
Wages	4	5½	9½
Provisions	2	4½	6½
Insurance	3	5	8
Repairs, &c.	5	10	15
Profit	5	8½	13½
	20	35	52½
Add port expenses at home, including harbour and light dues, commissions, &c.			8½
,, coals shipped in steamers from United Kingdom			2
Total			62

Here again little is included for the outlay on foreign vessels in English ports, while no deduction is made for the earnings of our fleet engaged in the coasting trade. Making all allowances, the figure of 60 million pounds as our foreign earnings in connection with shipping is submitted as near the mark.

The question arises whether the figures are *vraisemblable*, and it is immediately suggested as regards wages that we have a check. The number of persons employed in our mercantile fleet in 1880, not including masters, was 193,000. Dividing 9½ million pounds by this sum we get at an average money wage of 50*l.* per man.

I do not consider this a very high average, allowing for the fact that it includes the pay of masters, and officers of every grade, engineers, stokers, and others, all receiving more than the ordinary A.B. wages, which are not less than 2*l.* 10*s.* or 3*l.* per month.* The averages for sailing vessels and steamers would work out about 40*l.* per man for sailing vessels, and rather less than 70*l.* per man for steamers, which of course include a much larger proportion of highly skilled labour.†

With regard to victualling, I think I need do no more than refer you to the paper of Mr. Bourne already cited, in which he gives the estimate of 6 million pounds for victualling and stores for the year 1879—that is, victualling and stores put on board ships from the United Kingdom. As I understand Mr. Bourne's mode of doing the sum, this would include victuals and stores put on board foreign ships also, whereas this item in the above account only includes British ships; but the item in any case is not a large one.

The other items of insurance, repairs, renewals and depreciation, and profit require less remark. They amount altogether to 35 per cent. on the value of our shipping, which I assume to be about 40 million pounds for sailing vessels, and about 70 million pounds for steamers, in the year 1880. With regard to insurance, however, it may be pointed out that the replacements required by wrecks to vessels of the United Kingdom—I speak of total losses only—amount to about

150,000	tons,	sailing vessels
230,000	„	steamers
380,000	„	total

annually. The cost of building these vessels at 15*l.* per ton for sailing vessels, and 30*l.* per ton for steamers would be about 9 million pounds, or more than the 8 millions put down for insurance. I am inclined to think that this estimate in particular is under the mark, but I leave the figure as it stands, in case it should be thought by some that there is an over-estimate for repairs and depreciation. This last is a high estimate, though I consider it fully justified by the figures before me, shipping property ageing rapidly. With regard to the profit, in putting it at 12½ per cent., I have kept a good deal below what more than one shipowner

* See return, "Progress of Merchant Shipping for 1880."

† It will obviously be suggested that two deductions should be made, one for the wages of the fleet engaged in coasting, the other for wages paid abroad; but the deductions on these heads would, I believe, be immaterial, while I have sought to allow for minor corrections like these by the moderation of the estimates. In 1881, wages generally advanced above the figures here dealt with about 6*l.* per head, or nearly 1,500,000*l.* in all.

owns to, but the rate is undoubtedly a good deal more than that paid by the high-class steam shipping companies whose accounts are published. There is reason to believe, however, that the latter are among the least remunerative of vessels. With regard to port expenses at home, the broad facts are that harbour, pilotage, and light dues alone would account for nearly three-fourths of the amount here stated, and only a small part would fall on the coasting fleet. The final item of coal put on board steamers at home is rendered necessary in this calculation by the exclusion from the other items of any payments abroad, which are included in the general accounts above dealt with.*

There is a concurrence of testimony, therefore, to the effect that an enormous sum accrues annually to the United Kingdom in connection with its shipping business, and that the sum of 60 million pounds is not far from the mark. First, in examining the imports and exports of the whole world, we find a difference between them which must represent the cost of conveyance, and analysing and dividing this amount among the principal shipowning nations, we get a figure of about 60 million pounds as due annually to the United Kingdom for freight alone. Second, according to various testimonies—Mr. Bourne, Mr. Newmarch, Mr. McKay and others—there is known to be a large sum annually accruing in connection with the direct trade of the United Kingdom alone, a sum of 40 to 50 millions sterling, and this sum, making due allowance for what comes to us from the shipping in the indirect trade, again points to the probability of a large sum being due to us which cannot be less than about 60 million pounds. Third, the direct evidence of the accounts of numerous steamers and sailing ships points to a gross earning of this amount if not more, deducting all outlays abroad. Last of all, there is additional confirmation in the analysis of the different items of the expenses of our fleet, and the comparison of these items with other sources of information, such as, for wages, the number of men employed, for victualling and stores—the independent inquiry of Mr. Bourne, for insurance—the sums actually spent in replacing wrecks, for profit—the actual admissions of shipowners themselves, and the accounts of leading companies, and for such items as port expenses—the amounts actually paid for harbour and light dues. I must again repeat, however, my impression that probably a much larger sum is really due to us, in consequence both of the moderation of the estimates, and the circumstance of

* There ought to be some further correction, perhaps, as regards the latter figures in respect of the earnings of our mercantile fleet engaged in the coasting trade, already referred to, but that portion, as already stated, is comparatively small, while these last calculations do not include anything for the earnings or profit of British owned ships not on the register of the United Kingdom.

a large number of vessels not on the registers of the United Kingdom being in fact owned in the United Kingdom. It is not necessary, however, for the special purpose of this paper to name an exact figure. I shall be content if I have made clear that the business of shipowning is really enormous, and that if we would make any use at all of the imports and exports in the question of the balance of trade, we must dwell on the invisible export which takes place by means of our shipping. The discussion on the subject ought to include a formal treatment of the question of how much our shipping earns.

The inquiry does not end here. I have already drawn attention to the point that the shipowner is not the only person concerned in the cost of conveyance, of which the aggregate excess of imports in the imports and exports of the world are composed. There are other commissions and charges, of which I have suggested that the English share amounts at least to 16 million pounds; perhaps 20 million pounds would be nearer the mark. The latter sum is only $2\frac{1}{2}$ per cent. on the total of our imports and exports—about 800 million pounds; and when I point out that insurance cannot be estimated at less than 15*s.* per cent., and bankers' commission, bill stamps, and minor charges 5*s.* per cent., leaving only $1\frac{1}{2}$ per cent. for all other charges, the estimate must be held to be moderate. Mr. McKay, in the letter already referred to, makes the commission and charges amount to more than double this sum, and quotes the case of a Manchester shipment, in which the insurance and other charges come to 4 per cent. I confess I am afraid of too big figures, and have tried to keep well within the mark. The sum of 20 million pounds, added to the 60 million pounds due to us for freight, makes a total of 80 million pounds, which is really, to use a phrase which I have tried to make familiar, an invisible export. In using the imports and exports statistics for the question of the balance of trade, we have to credit ourselves, in addition to our recorded exports, with a sum of at least this amount.

Such figures, if accepted, without any further correction for interest receivable for investments abroad, would serve of themselves to revolutionise the conception of the international balance between this country and other nations, which would be suggested by the bare consideration of the import and export figures. In the last few years the excess of imports, as we have seen, has been about 120 million pounds (see *supra*, p. 205), but a deduction from this sum of 80 million pounds would reduce the amount to 40 million pounds, without any correction whatever for other international transactions, such as the receipt of interest upon our foreign investments. Even apart from such a correction then, the excess of imports is almost accounted for. A nominal difference of about

40 million pounds, subject to the qualifications already stated, is practically much the same thing as no difference at all. As we have seen, we cannot be sure to within 15 or 20 million pounds of the totals of our imports and exports, and the balance shown by them, while there is also a very great probability that the sum of 80 million pounds, which I have assumed to be annually earned by the country in connection with its shipping, and other charges in connection with the conveyance of goods from country to country, is a good deal under the mark. When we establish, therefore, that 40 million pounds is a maximum sum for the apparent excess of imports, we establish that there is nothing in such a figure by itself to give us any concern about the nation living on its capital. An excess of that amount might easily be balanced by an excess in the opposite direction in other years; we must expect so great a trade as that of the United Kingdom to exhibit oscillations of this magnitude. If it is to be proved that the nation is living on its capital to any extent at all, it must be shown *aliunde*, from the operations of the stock exchanges and otherwise, that the nation is borrowing abroad, or is bringing home its capital.

The figures suggest another correction of the first impression of the import and export figures. The excess of imports being itself no novelty, and the only thing new being the sudden increase in recent years, the question is naturally suggested whether there is any change in the invisible items of our export which would help to account for such an increase. On this head I need hardly say that nothing has been more remarkable during the last twenty years than the wonderful progress of our shipping, both in absolute amount and in relation to the rest of the world. The figures as to the United Kingdom are:—

Tonnage of Sailing and Steam Vessels belonging to the United Kingdom.

[In thousands of tons.]

	Sailing.	Steam.		Total in Sailing Tons.	Increase per Cent. in Five Periods.
		Amount.	Equivalent in Sailing Tons.		
				Tons.	
1840	2,637	87	348	2,985	—
'50	3,336	168	672	4,008	30
'60	4,134	452	1,808	5,942	50
'70	4,506	1,111	4,444	8,950	50
'80	3,799	2,720	10,880	14,679	64

The business is thus a rapidly increasing one. Twenty years ago the mercantile fleet of the United Kingdom was capable of performing the work of about two-fifths only of the present mercantile

fleet. Assuming the earnings to be in much the same proportion, the sum accruing to the United Kingdom in connection with its shipping would be about 27 million pounds only twenty years ago, as compared with 60 million pounds now. Even as compared with a period ten years ago, since which our mercantile fleet has increased 65 per cent., such an increase would imply that the earnings ten years ago were only about 35 million pounds, as compared with 60 million pounds now, a difference of 25 million pounds, by which our invisible exports, in connection with the shipping alone, have increased in the ten years. Not only then is the excess of imports no new fact, but the increase of it in recent years is obviously to be largely accounted for by the increase of our shipping business.*

The increase of our shipping has been going on quite steadily all through the recent years of depression. You had the figures before you at your last meeting in Mr. Glover's very able paper but for convenience of reference I have included in the Appendix (No. VI) a statement of the progress of our mercantile fleet in each year since 1854, from which date we are able to compare it with the excess of imports, adding a note of the estimated earnings for the United Kingdom on the basis already established. This shows a progressive increase from about 24 million pounds in 1854 to over 60 million pounds at the present time. It will be said perhaps that rates of freight have been diminishing, which is perhaps true to a certain extent; but such a reduction is allowed for in the mode of calculation adopted, the earning power of steamers being stated at three times only that of sailing ships, whereas their effectiveness is as 4 to 1. The reduction of freights cannot have been very great all round, though it may be large on some descriptions of cargo. The expenses, owing to the rise of wages, notwithstanding the great economy of iron as compared with wood, and the economy of labour by means of large vessels and the substitutions of steam for sailing, still remain very large, both per ton per annum and per voyage.

The other charges for conveyance accruing to a country like the United Kingdom must also have increased greatly during the last twenty years. The charge of $2\frac{1}{2}$ per cent. on the foreign trade of twenty years ago would have been under 10 million pounds, as compared with 20 million pounds now.

These corrections will best be shown in a short table, for which I have made use of the figures in Table III, already summarised (see *supra*, p. 205):—

* See also on this head Appendix X, already referred to, showing the great increase in recent years of weights carried in the direct foreign trade of the United Kingdom, where weights are stated or can be calculated.

Excess of Imports as shown in Appendix III, and Summarised above (supra, p. 25), Corrected by Deducting (1) the Charges for Gross Earnings of Shipping as shown in Appendix VI; and (2) the Charge of 2½ per Cent. for Commissions, Insurance, &c., on the Total Amount of the Direct Trade of the United Kingdom.

[In millions of pounds.]

	Total Imports and Exports.	Apparent Excess of Imports.	Charges to be Deducted.			Corrected Excess.
			Freight, &c.	Commission, Insurance, &c.	Total.	
	£	£	£	£	£	£
1854–56....	330	37	25	8	32	5
'57–59....	386	31	27	10	37	(−) 6
'60–62....	432	53	28	11	39	14
'63–65....	523	60	34	13	47	13
'66–68....	566	67	37	14	51	16
'69–71....	617	61	39	15	54	7
'72–74....	732	61	46	18	64	(−) 3
'75–77....	713	121	51	18	69	52
'78–80...	690	119	58	17	75	44

This table needs no comment. The figures are not presented as exact, but they show approximately the difference between the real and the apparent excess, and one of the reasons for the apparent excess increasing in recent years. There remains, of course, the more general question of the balance of indebtedness between nations, all the points yet dealt with, the imports and exports themselves, and the sum accruing to the United Kingdom for the gross earnings of its mercantile fleet and for other charges of conveyance being only items in a more general account. On this head, however, I may be permitted not to enlarge. It is notorious that a large sum is due to this country annually for its investments abroad; we belong, as has been seen, to a geographical group which has probably such interest to receive. The usual estimate has been about 50 million pounds to 60 million pounds a year; but since these estimates were made our investments abroad have increased enormously, the public issues on foreign account of the last six years alone, *i.e.*, since the foreign loan collapse of 1875 on the London Stock Exchange, having been about 210 million pounds, this figure not including, moreover, some very large issues, in which the London Stock Exchange was interested, but where the issue

was abroad. (See Appendix VII.) I am disposed to think also, from a consideration of the enormous investment of capital in the movement of goods in our ships, and in the conduct of our trade in foreign countries themselves, that this private capital has never been sufficiently estimated, and that our investments of capital abroad at the present time are not less than 1,500 million pounds sterling, on which interest at only 5 per cent. would be 75 million pounds per annum, at 6 per cent. 90 million pounds per annum, and at 7 per cent. 105 million pounds per annum. Whatever sum we take, looking at the small magnitude of the excess of imports which remains after proper corrections for the charges of the cost of conveyance, there can be no question that in recent years, large as the apparent excess of imports has been, this country has been continuing to invest capital abroad—from 40 million pounds to 60 million pounds per annum, if not more. But for this lending, the excess of imports would have been still greater than it has been.

I do not propose to go farther into this question of the balance of indebtedness in its international transactions for the United Kingdom. To complete it would require an elaborate investigation of the magnitude of private investments, while such points as the expenditure of British citizens abroad, and the expenditure by foreigners in this country, and the minor movements of international capital in connection with exchange operations, would all require to be considered. To treat this subject properly would require a paper by itself almost as long as the one now before you, which is already of ample dimensions. I shall be quite content if I have established to your satisfaction (1) that the question to be investigated is not that of the diminution, but of the increase, of our investments abroad—that there is really no question at all of the nation bringing home capital or living on its capital in recent years; and (2) that, whatever may be our conclusion on this point, the import and export figures themselves are only a small part of the question, and that the use of these figures by some writers as if they were the whole, is only to be excused, if it is excusable, on the score of ignorance of the nature of statistics and the necessary conditions of dealing with them.

V.—*Subject continued: The Excess of Imports or Exports in France and the United States. Conclusion.*

Mutatis mutandis, all these points have to be considered of course in dealing with foreign nations. I shall only consider two, the United States and France. The United States is the country which has perhaps the largest excess of exports. In the last six years, including bullion, that excess has been 37 million pounds

annually. (See Appendix VIII.) The United States is practically a country whose exports, apart from the question of interest on borrowed money, ought to balance its imports, its foreign shipping being quite insignificant, earning for it probably, according to the above calculation of 5*l.* per ton for sailing ships, about 6 million pounds a year only. How then is the excess of exports to be accounted for? What economic circumstances or conditions does it imply? I have to suggest two things: (1) the expenditure by United States citizens travelling abroad less the expenditure of foreigners travelling in the United States; (2) the interest payable to foreigners on account of foreign capital invested in the United States. The former cannot be less, I believe, than 10 million to 15 million pounds, the annual migration of Americans to Europe being 20,000 to 30,000, in addition to an American colony of several thousands almost constantly resident in Europe, and the latter cannot be less than 30 million pounds; total 40 million pounds. Even if the latter ought to be a smaller figure, we should still have to consider the margin of error in the United States figures, especially those for the imports, on account of the undervaluations and smuggling, so that the apparent excess of exports would be more than the real excess, because of the imports being undervalued. There is certainly nothing in the excess of exports to indicate unusual prosperity, whether present or prospective. The recent increase of the exports, and of the excess of exports, is also to be accounted for by the fact that in the last twenty years American foreign shipping has been diminishing in proportion to its total trade. That trade twenty years ago was 135 million pounds only, the tonnage of American shipping in the foreign trade being over $2\frac{1}{2}$ million tons, which, at the rate of 5*l.* per ton, would entitle it to a gross income of $12\frac{1}{2}$ million pounds a year. Now the trade is 347 million pounds, and the earnings from the shipping must be about 6 million pounds only. There is ample reason, therefore, for the excess of imports in the American trade ceasing, and an excess of exports beginning, apart from the farther obvious explanation that America borrowed large sums abroad during the civil war and afterwards, the interest of which has now to be paid. It seems a nice question whether America of late years has been reducing its indebtedness abroad, but there is nothing, at least in the import and export figures, corrected as they ought to be, to indicate such a reduction. I am only concerned, however, at present, with pointing out the nature of the inquiry which must be made.

As regards France, the account stands as follows for the last twenty years (see Appendix IX):—

[In thousands of pounds.]

	Excess of	
	Imports.	Exports.
	£	£
1860	—	13
'61	14	—
'62	—	3
'63	—	14
'64	—	17
'65	—	15
'66	1·5	—
'67	27	—
'68	34	—
'69	15	—
'70	7½	—
'71	19	—
'72	—	8
'73	—	7
'74	20½	—
'75	12½	—
'76	40½	—
'77	29½	—
'78	53	—
'79	48	—
'80	53	—

Here the excess of imports is less marked than it is in the case of the United Kingdom, and there has been a smaller increase in the excess in recent years compared with six or seven years ago. The explanation, no doubt, is that French shipping is comparatively small, being 932,000 tons, and has increased very little in recent years, the only change being that since 1860 about 200,000 tons of steam shipping have been substituted for as many tons sailing, the total rather diminishing. The total gross earnings for France, at the same rate as for England, can only be about 6 million pounds, and the increase in twenty years little over 2 million pounds. At the same time, leaving out our shipping, the excess is as great in proportion for France as for the United Kingdom. There can be little question of France having increased its investments abroad, notwithstanding the payment of the indemnity, while it must derive a large income annually from the expenditure of foreigners travelling or residing in France, French citizens by comparison going very little abroad. It would be interesting for France as for England to trace the growth of its foreign investments in recent years, but the problem of stating its balance is neither so large as that for England nor so complicated in various ways. The figures, however, when rightly considered, are in apparent accordance with the economic circumstances of the country, while they teach nothing as to comparative prosperity or the reverse.

The broad conclusion is that the importance attached in some of the recent discussions to the excess of imports in any country, and to the increase of that excess in this country in recent years, and contrariwise to the excess of exports in the case of other countries, and to the increase of that excess, is wholly mistaken. There is nothing in the facts either way to indicate special circumstances of prosperity or adversity, or that one nation is living on its foreign capital, and another increasing its foreign capital or diminishing its indebtedness abroad. The facts when investigated throw a great deal of light on the industrial circumstances of different countries, but until investigated and compared with other facts they are entirely without meaning. In other words, import and export figures require delicate and careful handling for any such inquiry as the account of indebtedness between nations. *Quod erat demonstrandum.*

VI.—*Import and Export Statistics and the Protectionist Controversy.*

The second special inquiry I have proposed is the way to use import and export figures in the controversy between free traders and protectionists. How do the statistics assist?

In answering this question, we must be struck by the fact that there can hardly be any statistics available to settle directly the cardinal question between free trade and protection, viz., which *régime* favours most the general prosperity of a people, morally as well as materially. No such question can be treated practically from a material point of view alone; political and moral considerations must come in. I could quite understand a free trader admitting a protectionist system to be the best materially, and a protectionist admitting the free trade system to be the best materially, and yet each on moral and political grounds preferring the less advantageous system in a material view. But how difficult to trace out all the effects of an economic *régime* in the moral and political sphere. Even materially, however, there can hardly be adequate statistics. To make any statistical comparison at all possible between different *régimes*, it would be necessary either to find two countries practically alike in their economic and industrial circumstances, and in the character of their people, subject them to the opposite *régimes*, and then ascertain and compare their relative material progress; or to find a particular country subjected at different periods to the two opposite *régimes* without any other differences, and then compare the different results, if any such are appreciable. Experience does not supply us with such cases. No two communities are sufficiently alike to be comparable in strict logic. The slightest differences in the race or moral condition of the two communities which are to out-

ward appearance much the same, might make a great deal of difference in their material progress. If the two are subjected to different economic *régimes*, how are we to tell whether the inferior progress of the one materially—even when we are sure about the inferiority—is due to the *régime*, and not to other differences in the character of the communities, which we cannot so well appreciate? The same with a community at different periods of its own history. How can we tell that there is no moral difference of a serious kind to affect the economic progress of the community between one period and another? External economic circumstances are besides incessantly changing, and may affect two communities apparently of much the same character and position quite differently. If it were possible to institute many pairs of comparisons and exhibit a uniform result in all, it might be safe to infer that it was the *régime* which did make the difference, no other uniform cause of difference being assignable; but this condition of course it is impossible to fulfil.

Quite lately an interesting attempt has been made by Mr. Baden-Powell,* to show that the *régime* does make all the difference in the case of two communities which he compares—New South Wales and Victoria, the former free trading and the latter protectionist; but directly I fear the comparison proves nothing. In strict logic one comparison is not enough. There must be many comparisons. It may be doubted, moreover, as regards this particular case, whether the two communities compared were really in sufficiently like circumstances at starting to make the comparison really valuable; while it is not shown that no other circumstances besides the economic ones may have helped to make the difference since; nor is it shown that the difference of the *régime* itself was so great as to justify us in calling the one colony free trading and the other protectionist. But granting the apparent likeness of the cases in all except the one point, what I have to urge is that one comparison proves nothing in strict logic, and at best does no more than raise a presumption to be confirmed or set aside by farther inquiry.

There would be a farther difficulty in making such an inquiry statistically, in the facility with which the visible consequences of an inferior *régime* may be masked by an increase of industry on the part of the suffering community to make up the loss. The community, rather than lose in the return to its labour, might labour more energetically, and so the outward result would be as before—the production, consumption, and saving, might remain what they were. It is even conceivable that the community suffering most might apparently gain, in consequence of a greater development of industry and energy than what is absolutely necessary to supply

* "Fortnightly Review," March, 1882.

the loss. In any case, I am quite ready to believe that the visible difference, as between free trade and protection, if the protection is not extreme, may often not be so great as to be traceable by statistics. Suppose the protected industries in a country giving protection to be one-tenth of the whole, or the industries which might be protected in a free trading community, but which are left free, to be also one-tenth, which is a large proportion, and that the loss arising to the community by the diversion of capital and labour from more profitable to less profitable employments is 10 per cent. on the production of this one-tenth of the people; then the loss to the whole community—the difference it makes—is only 1 per cent. of the total production. Even if the diversion causes a waste of 25 per cent. only in the protected industries in the one case, and the unprotected industries in the other case, the difference to the whole community is still only $2\frac{1}{2}$ per cent. Such small margins, it is obvious, may be lost sight of among other things, and easily made up by a little more industry on the part of those who suffer. They may also affect still less the growth of wealth, through the community bearing what loss there may be out of its income and accumulating wealth as rapidly as before. There is an inherent difficulty, then, of a very formidable kind, in showing by statistics that any given economic *régime* is more favourable to the material welfare of a community than another. Unless the differences are extreme and marked, there seems hardly possible much difference in the broad results, of which statistics can take note, whether a community is free trading or protectionist.

Such being the case as regards statistics generally, it is hardly necessary to add that import and export statistics alone cannot give much help. They are even irrelevant to the question to be answered. It is quite conceivable that a country may be very prosperous without foreign trade at all, or with very little foreign trade, or that for special reasons the foreign trade of the least progressing country as a whole, may be making greater progress than the foreign trade of a more progressing country. Were the British empire, for instance, to form one customs union, the foreign trade of that union would probably be less than the foreign trade of the United Kingdom alone is now, and its growth or decline would be less important in proportion to the whole business of the empire than the growth or decline of the foreign trade of the mother country is now to the mother country itself. The progress of the foreign trade of different countries is thus no index at all of their relative progress materially. Even therefore if you could reduce the so-called imports and exports of different countries to common denominators, and make all proper allowances for changes of prices and the like disturbing influences, which I have already shown to be most difficult, you would be no

nearer than you were before to proving that the country whose foreign trade increases fastest is the most prosperous materially. There is a more serious difficulty still. Foreign trade is trade between nations, and the foreign trade of a country which has an inferior *régime*, may consequently increase as much in amount, and perhaps infinitely more in proportion, than the foreign trade of a country with a superior *régime*. The trade of the inferior may be with the superior, and the two will increase *pari passu*, though the impetus may be given by the superior and not by the inferior. We may see this very clearly if we put the hypothetical case of two countries, the one free trading and the other protectionist, trading exclusively with each other, that is, having no other foreign trade, with a third country doing no trade itself but carrying for the two others. Clearly the foreign trade of the free trading and protectionist countries must exactly balance. Their imports and exports will be exactly alike. Whether, to give a practical illustration, the foreign trade of the United States with the United Kingdom has been the result of the impetus of the former or the latter will, I think, hardly be open to question. It is the United Kingdom which by its purchases has stimulated the foreign trade of the United States, small as that trade is compared with our own. In any case, these considerations show sufficiently that the increase of foreign trade proves nothing by itself as regards the relative material prosperity of different countries. The circumstances affecting foreign trade, besides the differences of *régime*, are innumerable; and above all, it is a necessity that countries with different *régimes* should trade with each other, so that the greater prosperity of free trade countries may cause the foreign trade of protectionist countries to advance more rapidly than that of their own.

But while statistics are thus not available in giving a distinct yes or no to the cardinal question between free trade and protection, it does not follow that they are of no use at all. Rightly used and handled they may contribute materially to the solution of the points at issue. I have to suggest various ways in which they may be so used.

First. The proposition, if accepted, that statistics are not available to prove directly the superiority of one *régime* to another in promoting material prosperity, appears to be entirely on the free trade side of the argument. It is the protectionist on whom the onus of proof lies. He affirms that if the State interferes with trade and does certain things, the greater material prosperity of a country will ensue. He is bound therefore to furnish proof that the State ought to interfere, and interfere in the way indicated. The free trader, on the other hand, need not prove anything at all. He simply wishes to let things alone unless it can be shown that

something should be done; the whole onus of proof is on his opponent. When it appears therefore that statistics cannot be appealed to in the direct issue between free trade and protection; that statistics can hardly be got to indicate in any way the superiority of one *régime* to another; this is as much as to say that the protectionist is not helped by statistics. One great branch of argument is cut away from him. Logically then the unsuitability of statistics, owing to their necessary imperfections, for solving the direct issue between free trade and protection, is a material fact. In pointing out that they are unsuitable we do a great deal to destroy the protectionist case.

It may be asked then how it is that the protectionist appeals so much to statistics—that he talks of the greater increase of prosperity in protectionist countries, of the greater increase relatively of the foreign trade of protectionist countries, of special industries promoted by protection, and so forth? The reply is that very often the facts appealed to are themselves misunderstood, being, as we have seen, very difficult to read, while their logical treatment is a difficult matter. I notice in all these discussions that the statement of the major premiss is avoided. The protectionists do not make clear to themselves what they wish to prove. They show, for instance, that the United States is prosperous; but that is not what they have to prove. What they have to prove is that it is more prosperous than it would have been under a free trade *régime*, a statement in which statistics cannot help them. They assert, again, that the foreign trade of protectionist countries increases faster than that of free trading countries; but what they have really got to prove is not only that it increases faster than that of other countries, but that it increases faster than it would have done under free trade, and that this more rapid increase is itself an index of greater growth of material prosperity generally than would have otherwise taken place. The proof again that special industries have been fostered by protection is *nihil ad rem*. What has to be proved is that the industry of the country as a whole has prospered, which is a very different thing. Without discussing then the whole case between free trade and protection, we are entitled, as a scientific body, to point out that the call which protection makes on statistics is one which cannot be answered. The protectionist seeks an affirmative answer to a question which statistics cannot answer affirmatively or negatively.

We may perhaps go farther, and say that as the protectionist relies so much on statistics, and has nothing else to rely on,—his argument is always an appeal from theory to facts—then there can be no argument for protection. This appears, in fact, to be the logical position of the controversy.

VII.—*Subject continued: The Negative Use of Import and Export Statistics.*

Second. While statistics can be of no use to the protectionist, they may be of use to the free trader, negatively, by affording presumptive conclusions that the anticipations of the protectionists are unfounded. The protectionist, in arguing that a country will be better off under protection than under free trade, implies and assumes that the condition under free trade will not be satisfactory, that this is the reason for not letting things alone. If, then, it can be shown that, taking countries as they stand, the condition of things is tolerably satisfactory under free trade, the difficulty of the protectionist would be enormously increased. The reverse, as we have seen, would prove nothing against free trade logically, but if free trade, on the average, appears to do as well, or better than protection, the protectionist is clearly out of court. His only appeal is to statistics, which could not by any possibility help him, but if the answer they give, as far as it goes, makes against him, he is hopelessly in the wrong.

Looking at economic statistics generally in this way, it is plain that free trade nations, and especially the United Kingdom, have nothing to complain of. The fact of the United Kingdom having made great strides in material prosperity since the free trade period is undeniable, and is not really denied by protectionists. Of late they say, owing to foreign tariffs and other causes, the results are less satisfactory, and they shake their heads ominously about the future, but the advance in the past I apprehend is not denied. If it is desired I think there are ample materials in our *Journal* to prove the contrary, so that a mere passing reference may be sufficient for me to-night. The satisfactory result may not be wholly due to free trade, and no free trader ever said that it was; Mr. Newmarch's repudiation of any such idea, in his paper read in 1878, was most emphatic; but it has been consistent with free trade, and it is upon protectionists to prove that the result with protection would have been better.

We are concerned to-night, however, with import and export statistics specially, and on this narrower field I may perhaps be allowed to refer to one or two facts which appear to raise an insuperable presumption against protection. I should not think of going into the history of our foreign trade exhaustively, the subject having been treated so fully by Mr. Newmarch in 1878, and our special business to-night being with the method of statistics; but without exhaustive treatment a few broad facts can be made to stand out clearly enough. Before pointing them out, however, I must again call attention to the remark already made, to the effect

that the progress of foreign trade is not necessarily an index of the progress of material prosperity in a country generally. It may or may not be so. But conceding it to be an index, the facts of our experience are not such as to encourage a protectionist to appeal to them. Our progress has been astonishing. The protectionist may imagine, or say he imagines, that under protection we would have done better, but surely he cannot deny that under free trade we have done well.

The first facts to be mentioned are those relating to the movements of shipping. Of these you had a very full account at the last meeting, and I have said a good deal to-night about the growth of our shipping business as a separate business, but I wish now to speak of those movements as an indication of the growth of imports and exports. To some extent they are a better indication than the figures of imports and exports themselves. The latter may fluctuate, as we have seen, owing to changes of price, but if increased quantities of goods are carried, whatever nominal sums they may be entered at, you must have more ships. It is quite true, of course, that shipping may increase disproportionately to the trade through the articles handled being more largely of a bulky and less valuable nature than before; but this is a point which can easily be inquired into. The entries and clearances of shipping then in the foreign trade of the United Kingdom during the last forty years have progressed as follows:—

	Tons.	Increase on Previous Ten Years.	
		Amount.	Per Cent.
1840.....	9,440,000	—	—
'50.....	14,505,000	5,065,000	53·4
'60.....	24,689,000	10,184,000	70·2
'70.....	36,640,000	11,951,000	48·6
'80.....	58,736,000	22,096,000	60·4

And the increase from first to last, between 1840 and 1880, covering the whole free trade period, is no less than 49,296,000 tons, and 525 per cent. To be quite fair, even in dealing with protectionists, it may be admitted that the increased use of steamers, which do a calling trade, may have caused some increase of entries and clearances without an increase of goods carried to correspond; but the self interest of shipowners may of course be trusted to fill up their vessels as much as possible. Comparing the figures with the

increase of population in the interval, it appears that while the entries and clearances in 1840 were 0·36 tons for each unit of the population, in 1880 they were 1·73 tons for each unit of the population, an increase of 381 per cent.

We may give some idea of these figures in another way. The entries and clearances of shipping in the foreign trade of almost all foreign countries put together, excluding British colonies, may be taken as 140 million tons.* The increase of our entries and clearances therefore, since 1840, is equal to one-third of the whole existing business of all foreign countries put together. Assuming imports and exports therefore to have increased in the same proportion, we may say broadly that the increase of the foreign trade of the United Kingdom since 1840 is equal to one-third of the whole foreign trade of the world, not comprised within the British empire. The increase, moreover, is equal to about $1\frac{2}{3}$ tons for each individual of the United Kingdom, or five-sixths of a ton of goods conveyed each way. If a growth of foreign trade like this does not please protectionists, what sort of trade is it which will satisfy them?

We come then to the suggestion that the goods have changed in character. They are said to be more bulky than they were. This is especially the case, we may be told, with the exports, where the increase is chiefly in coal and pig iron, in raw materials. But this does not prove that the real values involved have not risen in proportion. On the contrary, it is probable that value for value an export of so much coal or pig iron implies a much larger employment for labour and capital within the country than an export of so much cotton manufactures. The whole value in these cases is an export of the produce of British capital and labour, whereas, in the case of cotton manufactures, four-fifths or two-thirds of the value is a re-export. In other words, 10 million pounds worth of coal exported means an export of as much produce of British capital and labour as 50 million pounds worth of cotton manufactures. Not only so: the fact that equal values of coal or pig iron exported means more employment for shipping than values of cotton manufactures implies, as the shipping is mostly British, that there is an immense indirect employment for capital and labour in connection with the shipments. We may assume then that the increase in the movements of shipping is a very good index of the increase in the imports and exports themselves.

We may look, however, at the actual facts of a few chief articles, always remembering the circumstances pointed out by Mr. Newmarch in the paper already referred to, that the part of our foreign trade

* See Statistical Abstract for Foreign Countries.

which has most conspicuously increased is the miscellaneous trade. Take first the exports of cotton yarn and piece goods. The progress we find is shown as follows:—

	Cotton Yarn.			Cotton Piece Goods.		
	Total.	Increase on Previous Ten Years.		Total.	Increase on Previous Ten Years.	
		Amount.	Per Cent.		Amount.	Per Cent.
	Mln. lbs.			Mln. yds.		
1840	118·5	—	—	790	—	—
'50	131·4	12·9	11	1,358	567	72
'60	197·3	65·9	50	2,776	1,418	104
'70	186·0	(−)11·3	(−) 6	3,267	491	17½
'80	215·5	29·5	16	4,496	1,229	38

Note.—Percentage increase between 1840 and 1880: cotton yarn, 84 per cent., and cotton piece goods, 468 per cent.

On the same plan I make up the following short tables:—

Exports of Iron and Steel.

	Tons.	Increase in Previous Ten Years.	
		Amount.	Per Cent.
	Mlns.		
1840	0·3	—	—
'50	0·8	0·5	167
'60	1·4	0·6	75
'70	2·8	1·4	100
'80	3·8	1·0	36

Note.—Percentage increase between 1840 and 1880 equal to 1,167 per cent.

Exports of Hardware and Cutlery.

	Value.	Increase on Previous Ten Years.	
		Amount.	Per Cent.
	Mln. £'s		
1840	1·3	—	—
'50	2·6	1·3	100
'60	3·8	1·2	46
'70	3·8	—	—
'80	3·5	(−) 3	(−) 8

Note.—Percentage increase between 1840 and 1880 equal to 169 per cent.

Exports of Machinery.

	Values.	Increase on Previous Ten Years.	
		Amount.	Per Cent.
	Mln. £'s		
1840	0·6	—	—
'50	1·0	0·4	67
'60	3·8	2·8	280
'70	5·3	1·5	40
'80	9·3	4·0	75

Note.—Percentage increase between 1840 and 1880 equal to 1,483 per cent.

Exports of Coal.

	Tons.	Increase on Previous Ten Years.	
		Amount.	Per Cent.
	Mlns.		
1840	1·6	—	—
'50	3·4	1·8	112
'60	7·3	3·9	115
'70	11·7	4·4	60
'80	18·7	7·0	60

Note.—Percentage increase between 1840 and 1880 equal to 1,070 per cent.

These tables of course are not, and do not pretend to be exhaustive as regards foreign trade, while if they were exhaustive, many questions would be suggested as to the precise character of the increase, the countries with which it takes place, and other particulars. Comparing these exports, however, with the above stated facts as to shipping, they serve to show what a gigantic growth we are dealing with. It is difficult to imagine what foreign trade there can be which increases more rapidly. I have omitted giving any quantities for the imports, for the practical reason that the quantities of our importations are less in dispute, but they are easily enough accessible to all concerned.

The facts as to quantities being thus clear, we are able to use the facts as to values. The whole exports of British and Irish produce between 1840 and 1880, according to the declared values, have been :—

	Total.	Increase on Previous Ten Years.	
		Amount.	Per Cent.
	Mlns. £	£	
1840	51·3	—	—
'50	71·4	20·1	40
'60	135·9	64·5	90
'70	199·6	63·7	47
'80	223·1	23·5	12

and the increase between 1840 and 1880 is 335 per cent. There are some points in detail to be observed upon, but the progress generally is evidently as remarkable as that of entries and clearances of shipping and the quantities of the principal articles of export, and, taken in conjunction with these facts, gives fair ground for supposing that the whole foreign export trade in quantities, as well as values, has increased in about the same degree.

Dealing with values alone, as regards the imports, we get the following comparison:—

	Total.	Increase on Previous Decade.	
		Amount.	Per Cent.
	Mln. £'s		
1854*	143·5	—	—
'60	210·5	67·0	50
'70	303·2	92·7	44
'80	411·2	108·0	36

* In the case of the imports, there are no computed or declared values before 1854.

and the increase since 1855 is 186 per cent. Thus both in imports and exports there has been an enormous increase for the United Kingdom during the free trade period—an increase which has been demonstrated to be as great in quantities as in values in the case of the exports, and which is presumably so in the case of the imports, though it would encumber this paper too much to go into detail. As regards imports at least, there can be no question of its having continued to the latest date. There is no apparent falling off in the last few years to account for.

Clearly, then, in these figures the protectionist has a very difficult argument. If our foreign trade had progressed less, the onus of proof would still have been on the protectionist to show that under another *régime* it would have progressed more; logically, figures showing a less progress would not have helped his argument a bit. But the figures being what they are, he has to prove that protection would have had a better result, and promises better in future. He must

"Gild refined gold, and paint the lily."

Thus negatively the statistics of foreign trade are useful. The prosperity of the last forty years may not be owing to free trade, but it has been consistent with free trade, and protectionists must look elsewhere than in our import and export statistics for any argument against free trade policy.

There are one or two points, however, which are likely to be

cavilled at, though the figures themselves will help to supply an explanation. There is apparently a little support given by some of the figures to the contention that in recent years foreign trade has ceased to progress quite as rapidly as it did at an earlier period. The increase in the export values is only 12 per cent. in the last decade, as compared with 47 per cent. in the previous decade, 90 per cent. between 1850 and 1860, and 40 per cent. between 1840 and 1850. There is a similar diminution in the quantities of the principal articles exported, though not in all; while in one decade at least, viz., between 1850 and 1860, the proportionate growth of the movements of shipping was a little greater than it has been since. A little consideration will show, however, I believe, that while there were probably real causes between 1850 and 1860 for a greater proportionate increase of our foreign trade than there has been since—such causes as the great growth of railways between 1840 and 1850, which came really into use between 1850 and 1860, the gold discoveries, and the great colonisation which went on in the latter decade—yet the diminution in the rate of increase lately is much less than it appears to be. The period between 1850 and 1860 was the one in which the first effect of the gold discoveries, which beyond question raised prices considerably, was experienced. In the period since 1870 there has been a general decline in prices, aggravated specially as regards our own exports by a special decline in cotton. Keeping in mind then the important element of price, we see reason at once for looking more to the quantities and to the movements of shipping than to the values only. The figures, in fact, corroborate what has already been stated in the first part of this paper as to the importance of price. Unless we allow for this element, we shall be bewildered by the figures.

The point is perhaps worth even more minute consideration. Comparing the percentages of increase of the values of the exports and of the movements of shipping, we get the following results:—

	Increase of Shipping Movements.	Increase of Export Values.
	Per cnt.	Per cnt.
1840–50	53·4	40
'50–60	70·2	90
'60–70	48·6	47
'70–80	60·4	12
1840–80	525·0	335

Thus between 1840 and 1850, before the gold discoveries had caused prices to rise, and when they were probably tending to

decline, the increase of shipping was rather more than the increase of export values; in the following decade, when prices were undoubtedly rising, the increase of export values is more than the increase of shipping movements; in the third decade, viz., between 1860 and 1870, when prices were probably stationary, the rate of growth is about even in the two cases; in the last decade, when the level of price has probably declined considerably, the rate of growth of shipping remains much the same as in the previous decade, but the rate of growth of the export values shows a diminution. To my mind the suggestion of this table as to a fall of prices between 1870 and 1880 is most direct, and such questions of price I am satisfied will require to be more and more considered. We have not had import and export figures on a tolerably satisfactory basis for many years to deal with, and we are only beginning to find out the difficulties of using them when long periods are compared. Meanwhile the practical conclusion appears beyond question.

I have to suggest, moreover, what has already been stated in the previous part of the paper, as to the increase of our shipping business as a means of accounting for the non-increase of our apparent exports. It is because our invisible exports have been increasing so enormously, that there is less increase of the visible. But it is the same thing of course whether we export the produce of our capital and labour stored up in goods, or in the shape of repairs to ships, or new ships built to replace old ones, which carry the foreign goods of the world. In any way that we take the figures, there has obviously been an enormous growth of our foreign trade since the free trade period, continued to the most recent date. What the protectionist has to prove is that protection would probably have done better or so well.

It would be impossible to go through the imports and exports of foreign countries in detail, to show how they also raise a presumption against the protectionist. Looking at the difficulties of analysing the data themselves, and allowing for special circumstances which may have affected the foreign trade of different countries, the difficulty of inquiring what the facts are as regards foreign countries, and of finding suitable pairs of free trading and protectionist countries for comparison, would in truth be insuperable. To mention only some of the difficulties which occurred to me in endeavouring to form a group of protected European countries, I may state that the fact already mentioned as to the recent change from official to real values in Austria, throws out all comparisons as regards that country; and that for Russia comparisons are equally thrown out by the recent depreciation of the rouble and rise in nominal prices, which unduly swell the figures of the foreign trade, while a reduction of the rouble to specie value in each year would

be open to some exceptions. For Germany, again, we have statistics for ten years only, too short to be of any value. This leaves no other country than France among the great European States as to which a special inquiry would seem worth while, and even as regards France we have also to remember that the separation of Alsace and Lorraine ten years ago was a special cause of increase in the foreign trade, what was home trade in France becoming in fact foreign.

In the absence of any general grouping, then, I shall refer specially to two foreign countries only—the United States and France—the former a protectionist country, which became in the period under review more protectionist than at the beginning, and the latter a protectionist country, which became less protectionist. Is there anything on the face of the figures of either country to suggest such a progress in their foreign trade, assuming that trade to be a good index of material prosperity, as to imply that protection is a specially advantageous *régime?*

With regard to the United States, making a table in much the same form as that for the United Kingdom, but including specie, the general figures are:—*

Foreign Trade of the United States.

[In millions of pounds.]

	Imports.			Exports.		
	Amount.	Increase on previous Period.		Amount.	Increase on previous Period.	
		Increase.	Per Cent.		Increase.	Per Cent.
	£			£		
1840....	21	—	—	26	—	—
'50....	36	15	72	30	4	16
'60....	72	36	100	80	50	165
'70....	92	20	28	90	10	12½
'80....	152	60	65	170	80	89

And the increase in the imports for the whole period is nearly 700 per cent., and in the exports between 500 and 600 per cent. In *proportion*, therefore, there is a greater rate of progress in protectionist America than in free trade England, though if we take the whole period, not so much greater an increase as to raise any

* I make use here of the figures in an article in the "Times" of November last.

presumption in favour of protection as being more likely to develope the foreign trade. I need hardly say, however, that in such a question the mere proportion of increase is not the proper test. The amounts are also material, and it cannot fail to be observed that the United States being a larger unit than the United Kingdom, has at the beginning, and still has, a smaller foreign trade. The whole imports are, in fact, 150 million pounds only at present, as compared with 400 million pounds and upwards into the United Kingdom; and the whole exports are 170 million pounds, as compared with 223 million pounds of domestic produce exported from the United Kingdom; the latter figure besides, as already explained, not including the invisible export in the shape of outlay for earning freight. The increase in imports again between 1840 and 1880, is 130 million pounds, as compared with an increase of 268 million pounds into the United Kingdom since 1854 only; while the increase of the exports between 1840 and 1880 is 144 million pounds, as compared with 171 million pounds in the case of the United Kingdom, again remembering in the latter case that our invisible exports have increased so much, and are not reckoned in this calculation.

These figures then rather suggest, if anything, the superiority of a free trading to a protectionist *régime*. They are something for the protectionist to get over if he appeals to progress in imports and exports as a proof of the superiority of protection. No doubt in any complete discussion we should have to analyse minutely what the foreign trade in each case is composed of; while it would be fair to allow, I think, that the United States, from its geographical extent and the ancient development of its manufactures—for the eastern States are as much an old country as England—may have a smaller foreign trade in proportion than another country of less extent with large manufactures, or another country of large extent without manufactures. It is an empire within a ring fence, and the foreign trade of the British Empire, if that empire were made a customs union, would, as already stated, be less than the foreign trade of the United Kingdom now is, and certainly much less in proportion to the home trade. Still all these nice considerations are out of place in the mouths of protectionists, who have dwelt lately on the wonderful progress of the American foreign trade. The figures, in the way they use them, turn against themselves.

Coming to the French figures, I have to submit a similar table, beginning, however, in 1850 only, as there are only official values in 1840:—

General Imports into France, and Exports of Domestic Produce.

[In millions.]

	Imports.			Exports.		
	Amount.	Increase on previous Period.	Per Cent.	Amount.	Increase on previous Period.	Per Cent.
	£	£		£	£	
1850	45	—	—	43	—	—
'60	106	61	135	91	48	109
'70	140	34	33	112	21	22
'80	245	105	75	139	27	22

Here again the rate of growth is apparently as great as that of the United Kingdom, though an exact comparison is impossible, as we cannot go back to 1840. The amount of trade and amount of growth, however, are, like those of the United States, much smaller than the amount and growth of the United Kingdom, although France, like the United States, is a larger unit. In the imports the growth is 200 million pounds between 1850 and 1880, as compared with 286 million pounds in the United Kingdom, between 1854 and 1880, and in the exports it is 96 million pounds between 1850 and 1880, as compared with 151 million pounds in the same period in the United Kingdom. There is nothing then in the French figures to make a case for the protectionist, while there is ground for claiming that between 1860 and 1880 France had made considerable steps in the direction of free trade, so that whatever progress had been made might be ascribed to free trade, and not to protection. There is no need, however, to press this point. France may be taken as a protectionist country. There is surely nothing in the figures to raise any doubt of our free trade *régime*, always remembering besides our own invisible exports.

It is interesting to note, in passing, the great augmentation of French trade between 1850 and 1860, a sign of the rise of prices I have already suggested in connection with the English figures for the same period. In France, however, the augmentation may partly be due to the more intimate connection which then took place between France and its neighbours on the different land frontiers, which must have been a powerful special cause, I believe, for the development of foreign trade among inter-continental countries.

To bring these figures to a point, it may be useful to look at a calculation per head of the population in each case:—

Imports and Exports per Head of the Population in England, France, and the United States compared.

	United Kingdom.			United States.			France.		
Imports—	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
1840		—		1	5	2		—	
'50	5	3	2*	1	10	9	1	5	–
'60	7	7	-	2	6	1	2	17	4
'70	9	14	4	2	8	–	3	15	8
'80	11	18	7	3	–	9	6	12	5
Exports—									
1840	1	18	9	1	11	1		—	
'50	2	11	10	1	6	2	1	3	11
'60	4	14	7	2	10	11	2	9	2
'70	6	7	11	2	6	11	3	–	6
'80	6	9	5	3	8	1	3	15	2

* Year 1854.

Thus our imports are still about four times per head those of the United States, and twice per head those of France, and our exports are about twice those of either country, not counting, what I must always insist on, our invisible exports. The increase of our imports per head since 1850 is also double the whole of the present imports per head into the United States, and about equal to the present imports per head into France, and the increase of our exports since the same date is between 25 and 50 per cent. more than the total exports per head in either case.

We may conclude then that not only has England made satisfactory progress in its foreign business under free trade, but the most prominent foreign countries have advanced less under protection. The onus of proof thus laid on the protectionist to show that we would have done better than we have done under protection, or that we shall do better in future with protection, appears to me overwhelming. There is no bearing up against it. Thus statistics, though they cannot logically prove the affirmative in the direct issue between free trade and protection, from the difficulty of finding exactly parallel cases and eliminating other causes, may be used to prove negatively that there is nothing in the apparent facts to help the protectionist. The presumptions are altogether against the latter.

VIII.—*Subject continued: Other Uses of Import and Export Statistics. Conclusion.*

A *third* way in which statistics may be used in the argument, is to show that protection does certain particular things which are obviously of an injurious tendency, while there is and can be no

proof that the advantages of protection counterbalance these evils; and on the other hand that free trade effects certain ends which are obviously beneficial, which are *additive* to the welfare of a community, without any drawbacks. Facts of this nature corroborate the general theory of free trade, though they do not demonstrate completely and logically by themselves that the one *régime* is better than the other.

We may examine what a few of these facts are. Peoples adapt themselves quickly to any *régime*, and when a particular *régime* has been long established, it is difficult to see what its permanent effects are; but when changes are made the nature of the influence may be perceived, and it is from such transition periods we get evidence for or against the one *régime* or the other.

To go back a long way, let me refer you to a comparatively old book, Sir Henry Parnell's "Financial Reform," published in 1832. At pages 37—39 *et seq.* of the book, this author gives numerous instances of the effect of high duties in checking consumption, that is in diverting trade and imposing various hardships on the community. He refers to tea, tobacco, wine, spirits, and other articles, in which an increase of taxes produced no more or little more revenue; and I shall quote as a specimen what he says of flint and plate glass:—

"In 1813, the duties on flint and plate glass were doubled. In "four years to 1813, the average annual quantity made for home "consumption was 66,500 cwt. In the four years following 1813, "the annual average quantity was only 30,000 cwt. The duties on "all other kinds of glass were doubled in the same year. The "revenue received in the four years preceding 1813 was, on an "average, 340,000*l.*; that received in the three years following "1813 was, on an average, 395,000*l.*, so that the doubling of the "duties, instead of producing 340,000*l.*, produced only 55,000*l.*"

In the opposite sense Sir Henry Parnell then refers to numerous remissions of high duties which produced increase of revenue, and I shall again only mention the case of flint glass, in which a reduction of duty, in 1825, from 98*s.* to 56*s.* per cwt., was followed by an increase of consumption from 30,000 to 47,000 cwts. annually. Sir Henry Parnell adds:—

"The Committee of Finance state, in their fourth report on the "revenue and expenditure, that if the revenue had fallen off in the "five years from 1825 to 1828, in the same proportion that taxes "had been reduced, the diminution of it would have been 9 million "pounds; but that, owing to increased consumption, it had only "fallen off about one-third of that sum."

No doubt Sir Henry Parnell is speaking of high taxes generally, but the greater includes the less, and high tariffs of a protective

character must have exactly the same or a worse effect in diverting industry and diminishing consumption as high taxes of a non-protective character. It is the tendency of the system which is exhibited in such instances as those given by Sir Henry Parnell. The book I refer to is comparatively forgotten now-a-days, but it was famous once, and those who look into it will find it to deserve its reputation.

Another case of the effect of the large remission of duties at the period of transition, is supplied by the experience of what occurred in this country in the first two years after the introduction of the free trade tariff of 1842. Historically this experience had a great deal to do with the practically unanimous conversion of the country to free trade principles, but the striking nature of the facts statistically is still worth repeating. They are recorded for us in a little book of Mr. Gladstone's, not, I fear, very well known, entitled, "Remarks upon Recent Commercial Legislation," published in 1845.* It would be hopeless for me to attempt to give a condensed account of this book, to which I can but refer you, but among the principal points I note (1) that the calculated money loss of the reductions of the tariff in 1842-44 was 5,142,000*l.*, and that other duties were repealed or reduced, involving a money loss of 1,162,000*l.*, making together a sum of 6,304,000*l.*, and that the free surplus of the income tax over and above what was required to supply actual deficiency was only 2,621,000*l.* This was all that was really required, as the event proved, to balance remissions of taxation amounting to 6,304,000*l.* (pp. 12 and 13). (2). The mean estimated loss from remissions of duties on raw material mainly was 1,452,000*l.*, and the actual loss in the first year after the tariff Act was about this sum, but this first year was a year of great depression, and the actual loss in the second year was 1,133,000*l.* only, showing a recovery in that year of 325,000*l.* on a total of about 3 millions only (pp. 27 and 28). (3.) The net loss of revenue from a great remission of the timber duties, while it was greater in the first year by 114,000*l.* than Sir Robert Peel had estimated, was less in the second year than he had estimated by no less a sum than 193,000*l.*, showing a great recovery in the trade (pp. 36 and 37); and (4) the predictions of injury to our manufactures and other industries by exposing them to foreign competition—there was quite as much talk of foreign competition then as there is now—were ludicrously falsified in the case of cork cutting, candle making, vinegar making, and other industries (pp. 49 *et seq.*). In all these matters a free trade tariff had apparently done what it was expected to do, and had contributed to swell the volume of national trade. As I have said, I am by no means condensing the volume, which is itself in a highly

* London: John Murray, 1845. Third edition.

condensed form, but only pointing it out as a mine of information on the proposition that the change from a protective to a free trade *régime* appears to stimulate trade, from which we infer that the stimulus continues to operate afterwards, though it becomes impossible, from change of circumstances, to compare in a strictly logical manner a free trading and a protectionist *régime*.

A third source of information, to which reference cannot be too often made, is Mr. Wells's valuable reports as commissioner of internal revenue in the United States. These are so well known that I may refer to them very briefly only. We hear a great deal of the growth of certain manufactures in the United States which have been protected, but these reports show clearly the reverse of the medal—the injury to other industries incidental to these changes. Thus the first report for 1866 dwells largely on the injury to the woollen manufacture by the protective tariff on wool, designed to protect the growth of raw wool. Then in the report for 1869 we have many such statements as this about boots and shoes, viz., that the export value declined from 1,329,000 dollars in 1863 to 682,000 in 1867, and 475,000 dollars in 1869. Lastly, there is the well known story of the decline in the American shipping trade, and the great increase in the amount of the foreign trade of the United States itself, carried on in foreign ships. Mr. Wells gives a table at p. 30 of the report for 1867, showing even then the preponderance of foreign vessels in the carrying trade of the United States, and calculating the amount which the United States has to pay to foreigners in consequence, the opposite of the calculations I have submitted to you to-night as to what this country has to receive. These are all instances of loss arising through protectionist measures, and they should be remembered, as being undoubtedly in operation as a check to industry, though we cannot well see the effects from day to day when a country has adapted itself to a protectionist *régime*. What they prove is, that protection does not add to the industry of a country, but it only diverts the industry at a great expense at the time and presumably at a continuous expense. The loss is certain and the gain entirely problematical, however much it may be proved that certain special industries have been fostered by protection.

As there are many later figures about American shipping since the date of Mr. Wells's report in 1869, and there is still a vague impression that it was the "Alabama" which diverted shipping business from the United States, I may be allowed to notice briefly these later figures, and see how far the impression as to the "Alabama" is confirmed. The first set of figures show the increasing preponderance of foreign vessels in the American carrying trade. For the years ended 30th June, 1871-80, we get the following figures :—

Table showing American Imports and Exports Carried in American and Foreign Vessels respectively.

[In millions of dollars.]

	Exports of Domestic Produce.	Imports.	Total.
In American Vessels—			
1871	181	163	344
'72	161	177	338
'73	163	174	337
'74	166	176	342
'75	145	158	303
'76	160	143	303
'77	156	151	307
'78	159	146	305
'79	122	144	266
'80	109	164	273
In Foreign Vessels—			
1871	376	363	739
'72	381	445	826
'73	478	472	950
'74	521	405	926
'75	493	382	877
'76	480	321	801
'77	515	329	844
'78	557	307	864
'79	588	310	898
'80	719	579	1,298

A table like this speaks for itself. While the amount of American trade carried in foreign vessels increases in ten years from 739 million to 1,298 million dollars, or more than 50 per cent., the amount carried in American diminishes from 344 to 273 million dollars. The American share, which is nearly half the foreign at the beginning of the period, is at the close just about a fifth of the foreign.

The second set of figures relates to American ship building. I give the figures for twenty years, covering the whole of the "Alabama" period. They are as follows:—

Tonnage of Vessels Annually Built in the United States in the Years 1860-80.

[In thousands of tons.]

Year.	Thousand Tons.	Year.	Thousand Tons.
1860	213	1871	273
'61	233	'72	209
'62	175	'73	359
'63	310	'74	432
'64	415	'75	297
'65	383	'76	203
'66	336	'77	176
'67	303	'78	235
'68	285	'79	193
'69	275	'80	157
'70	276		

What this table shows, I think, is, that American ship building did not fall off till after the war. From 1863, the third year of the war, down to and inclusive of 1871, the ship building is larger than in 1860 and 1861, and not much short, I may state, of the figures in the previous decade, which was one of great prosperity in American shipping. As late again as 1873 and 1874 the building is considerable. I think we may infer from this that down to a very recent period even American ship building and ship owning had a sufficient basis for its development, if that development had not been checked by external causes. The effects of the "Alabama" would in fact have been very speedily recovered from but for other causes. Probably, indeed, the operation of the civil war was not so unfavourable as it seemed. If ship building for private individuals was checked, there was a great demand for Government ships, and miscellaneous vessels of all kinds, and at the close of the war there was nothing to prevent American ship builders and ship owners from recovering some of the ground they had lost. It may perhaps be doubted whether even with a free trade tariff in America, the results would not have been the same as they have been. There were natural causes, I believe, operating in favour of the extension of the industry in British hands; but that the American tariff made impossible the extension of American ship building, which would otherwise have been difficult only, is beyond doubt.

Last of all, coming to more recent times, the experience of the high tariff in Germany may be referred to as proving that those particular evils happen which free traders predict from such a tariff as Germany has established, viz., a high price of food, the deterioration of the position of the labourer, and a general *malaise*. On this head I need do no more than mention the well-known paper containing extracts from reports of the German Chambers of Commerce respecting the new tariff and its effects, lately presented to parliament by the Board of Trade. The reports summarised in that paper do not contain many figures, but the statements are distinctly quantitative, and when a sufficient time has elapsed we shall no doubt have the statistics.

Thus in many ways statistics can be used to show that the tendencies of free trade and protection are what they are said by free traders to be—the former *additive* to the material prosperity of a country, the latter *substractive*, in some of their effects at least, so that no proof can be given of their being on balance beneficial. The quantity of evidence of this sort is overwhelming—I have only given a few instances. If we keep in mind the exact logical value of this evidence, it is destructive, I believe, of the protectionist case, as far as the appeal to statistics is concerned. In the absence of direct comparisons between free trade and protectionist *régimes*,

which is a circumstance entirely against the protectionist, all the indirect evidence of tendencies exhibited at transition periods is in favour of the free trader.

A *fourth* way in which statistics may help in this controversy is by demonstrating the confusion of ideas which one always finds to be of the essence of a fair trade argument. The difficulty in dealing with these arguments is the difficulty of understanding them only, of trying to form a conception of what is in the mind of your opponent. You are told at one time that our foreign trade is falling off enormously, the alleged proof being that the exports of domestic produce have declined in value; while the obvious fact, apart from statistics, is the preponderance of English foreign trade in the business of the world, so that if the figures apparently showed the contrary, that would be no reason for arriving at a conclusion with which other facts would not fit in, but a reason only for studying and inquiring into the figures themselves, and seeing what they really meant, when properly rectified. We are told at another time that imports of manufactured articles into the United Kingdom are increasing, leading to the decay of manufacturing at home; the fact being, as distinguished from what some statistics may show or appear to show, that there never was more manufacturing than there is in England at the present time, of which the obvious proof is the rapid increase of the population in recent years, and the fact that pauperism has been stationary or declining. If any statistics therefore appear to show the contrary, that is only a reason for studying the statistics with all the collateral aids possible, not for blindly rushing at a conclusion with which nothing else will agree. Similarly we have had the excess of imports in a country dealt with as a proof that the country is running into debt; the excess of exports from other countries used as a proof that they are prosperous, these countries being also assumed not only to be protectionist, but to owe their great exports to protection, and so forth; the real facts as to whether one country is running into debt and another gaining not being otherwise inquired into. The peculiarity of most such ideas is, that even if true they do not help the protectionist argument, which is of such a kind as we have seen, that it cannot be helped by statistics; but the so-called arguments and statements are themselves misleading and unintelligible. Now one supreme use of the study of statistics, including import and export statistics, which is our special subject to-night, is to clear up all this confusion; to introduce true ideas where there are strictly no ideas at all—no picture of what is really going on in the world; and in this way to purge the mind of any tendencies to protectionist heresy. The mind capable of thinking about economic questions from a statistical

point of view, and forming a true picture of the facts of the business world, would not, I maintain, be liable to the influence of protectionist ideas. It is not among leading business men in the city, or men conversant with great business affairs anywhere, with the single exception perhaps of Prince Bismarck, that you find these confused notions, which are the congenial soil of protectionist heresy.

How statistics help in these matters has already been set forth, I hope, to some extent, by the discussion of the excess of imports controversy, and by reference to many special points. But a few more remarks may be permitted to illustrate the extreme confusion of ideas which require to be cleared up. To come back to the excess of imports controversy; even if the excess of imports meant what it is assumed to mean, it would not help the protectionist, but the real facts are wholly different from the apparent ones, and any true study of the subject gives quite a different idea of the business activity of England from the careless one. Our exports of British produce being nominally 223 million pounds, of which about 60 million pounds is raw material previously imported, the real export of the produce of British capital and labour shown in the so-called exports is thus about 160 million pounds only. We have found, however, on investigating the facts, that our unrecorded exports, in the shape of freights carried and other charges on the conveyance of goods, apart altogether from interest on investments abroad, amount to about 80 million pounds—about half the real amount of our recorded exports of British produce—so that without having some view of these unrecorded exports, we have no true idea of English trade. Without taking the unrecorded figures into account, we should err in our appreciation of the actual fact of England's business activity by 30 per cent. or more. It is not that the statistics—the figures themselves—are wrong. They merely require study and careful interpretation to get at the facts which underlie the statistics.

Another illustration of how the true study of statistics clears up false conceptions, is supplied by the confutation of many historical arguments which have recently been used by fair traders. Not long ago an evening journal of the very highest literary reputation, admitted into its columns a series of letters comparing the relative progress of English trade at different dates during the last two centuries, in which not the slightest reference was made to the fact that we have no good statistics of aggregate imports before 1854, and no declared values of exports before 1820, so that all comparisons before these dates, or between facts before and facts after these dates, are most difficult. The true study of statistics of course shows the necessary limitations of any such comparisons. I do not say it would be quite impossible to go back farther to some good

purpose. It is quite likely that a careful student, with a good record of prices in his hand, willing to take the trouble to compare this record with the official valuations from time to time, and to attend to the relative magnitude of the chief articles of trade, might arrive at results which would throw a great deal of light on the economic history of the last two centuries. But for the present the confused notion that our recent progress under free trade has been less than in former periods before free trade, which was the conclusion or apparent conclusion of the remarkable letters I have referred to, must be dismissed as a mere wild notion which cannot be known to have any relation to actual facts. The range of our genuine knowledge in these matters is much more limited than such discussions assume.

Another illustration of how true ideas may be substituted for false, is supplied by the discussion in Mr. Farrer's recent pamphlet issued by the Cobden Club, on "Free Trade *v.* Fair Trade." A great deal of this pamphlet is taken up with the refutation of the idea that our trade with the colonies is specially beneficial or tends to increase more than our trade with foreign countries. For myself, I cannot see how the idea which Mr. Farrer refutes tends to support the protectionist argument. It rather seems to prove that as the colonies are less protectionist than foreign countries, their relative free trade is only a sign that if they were more free trading the better for us. But Mr. Farrer's demonstration that there are "colonies," and "colonies," and that there have been great fluctuations in the amount of trade and its proportion to our whole trade which we have done with them in different periods, is conclusive as to there being nothing in the protectionist notion of the special value of colonial trade. Perhaps I may add that a reference to one of the tables which I have given to you to-night, viz., that showing the issues of public loans and companies on the London Stock Exchange on foreign account in the last six years, throws some light on the momentarily greater development of our trade with the colonies as compared with our trade with foreign countries. This list comprises a very large proportion of colonial issues, a much larger proportion than the previous six years, before the foreign loans collapse, would have shown. The truth is, I should say, our exports to the colonies lately have kept on increasing because their credit was never impaired, while our exports to many foreign countries fell off because we ceased to lend to them. At any rate the point seems worth investigating before drawing absolute conclusions.

Yet one more remark on this head. Mr. Farrer shows conclusively enough that colonies are of different sorts, and they are not to be grouped together, nor are all foreign countries to be grouped together. This reminds me of a different grouping of

countries, which some of you may remember, by a gentleman, Mr. Ernest Seyd, who was one of us, and for whom we all had the highest respect, though few of us agreed with his conclusions or methods. Mr. Seyd grouped countries into those having the gold standard, and those having the silver standard, and found, or believed he had found, that it was with countries having the gold standard our trade had progressed most, while with countries having the silver standard it had tended to decline. I do not know whether if Mr. Seyd had lived and observed the very last advance in the trade with India he would have adhered to his view, but his division was at least quite as logical as the division into colonies and foreign countries which has lately been made.

The conclusion is that such rough groupings and the facts apparently shown are not be relied upon, and do not yield true ideas in a statistical view. The inquirer in this as in other matters must try many methods, and must not conclude that the apparent look of the figures corresponds to facts. A true history of the recent course of the foreign trade of the principal nations of the world, would lay stress upon many things besides the division of nations into British colonies and foreign countries, as into gold standard and silver standard countries. The progress of invention, the growth of shipping in one country, and its decline in another; the settlement of new countries, and the like facts, would all have a place, and perhaps a larger place, than the points which protectionists and fair traders, or enthusiasts like Mr. Seyd, who concentrate their attention on one subject only, take up. I need not, however, multiply illustrations, especially as the whole course of the argument to-night has been to substitute, as I hope, true ideas for false ones, on many points.

In various ways then, we conclude that a use can be made of statistics of imports and exports in the discussion between free traders and protectionists. The fact that such statistics cannot be used in the direct argument as to which *régime* is most favourable to material progress, is against the protectionist, who calls for Government interference, and must thus prove his case, while the free trader is passive. The statistics at the same time supply ample proof *primâ facie* that there is nothing in the apparent figures of imports and exports to supply a case against free trade. Next, they can also be used to prove that at the period of transition from one *régime* to another, the tendency of free trade measures is to add to the prosperity of a country, while no such tendency can be proved of protectionist measures. Finally, they help to prove the utter confusion of ideas which is found to be the most fitting soil for the growth of the protectionist idea itself. Without then making more of statistics than can really be made of them, we can

affirm that they are most useful in these controversies. They are, however, useful in proportion only as we observe their necessary limitations. If the example of protectionists is imitated by free traders, and the first figures that come to hand are shied at opponents on the principle that any stick is good enough to beat a dog with, I am not sure that figures will help the free trader much. The public will simply be puzzled, and induced more than ever to believe that there is nothing at all in statistics.

IX.—*Conclusion.*

I have now to return to the point from which I started. My complaint at the beginning was of the wrong use of statistics, and the neglect of the conditions upon which alone they can be rightly used. If I have made out a case at all, it is that even import and export figures, which are so familiar to many, cannot be handled with facility; that there is a world of knowledge to be learnt concerning them; and that in all directions sound and diligent study must precede any good use of them; but that if there is such a study of statistics, useful and valuable conclusions can be arrived at with certainty. My suggestion, then, would be that there is need, not only for the members of this Society to redouble their exertions in the way of diffusing a knowledge of statistical methods, but for some improvements in our system of education, in which there is hardly any visible place given to statistics. There are many chairs of political economy in this country, but no chair of statistics that I know of, and very few, if any, of the political economy chairs, where the teaching of statistics forms part of the course. Some remedy surely ought to be applied to this defect. As regards political economy, it is quite certain that any study of that science in its applications is impossible without statistics. A theoretical teacher may trace out tendencies or forces on paper, but in the real world quantities must be dealt with; and in the measurement of tendencies or forces statistics are absolutely needed. It is easy to prove theoretically, for instance, that a protectionist tariff does harm, but it is a different thing in the real world to give any notion of how much harm is done, and when the protection is slight in proportion to the whole business of a country to measure the effect at all. How to deal with such questions is the problem for the economist who is also a statistician, and they are much more difficult and complex than those belonging to theoretical or deductive political economy. The time has come then, it seems to me, when the public have a right to expect that in our universities statistics should have some recognised place as well as political economy. If the facts of

the business world, as it is constituted at present, were taught statistically, and some notion given of the sources of information and of how they could be rightly used, much of the recent discussion between free traders and protectionists would probably have been saved: most educated men would have seen at once when propositions were stated which were incapable of statistical proof, and when figures were used without any study or appreciation of the facts underlying them; the protectionist or fair trader would have been summarily laughed out of court, instead of being supposed for a time to have had so much of a case that party politicians on one side thought fit to give him some encouragement, and party politicians on the other side were a little apprehensive of the result. The study of statistics should undoubtedly form a necessary part of liberal education, especially of those who aspire to be politicians or public men.

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APPENDIX.

I.—*Statement showing the "Official" and "Real" Values of the Principal and other Articles Imported into, and Exported from, the Austro-Hungarian Empire in the undermentioned Years.*

[From the Statistical Abstract for Foreign Countries for 1880.]

IMPORTS.

[000's omitted.]

Principal Articles.	Official Values.				Real Values.			
	1875.	1876.	1877.	1878.	1875.	1876.	1877.	1878.
Animals (except horses)	17,318,	19,877,	19,713,	11,911,	29,834,	39,777,	41,565,	25,074,
Coal	9,810,	9,475,	9,022,	10,019,	8,189,	7,897,	6,020,	5,353,
Coffee	24,501,	25,346,	26,473,	31,133,	34,901,	35,976,	37,240,	37,911,
Cotton, raw	44,183,	48,654,	48,564,	49,700,	35,360,	33,816,	33,158,	34,114,
„ yarn	18,952,	17,838,	21,634,	23,626,	23,351,	18,168,	19,718,	21,394,
Dyestuffs	10,404,	10,838,	10,300,	11,017,	13,051,	14,022,	11,703,	12,264,
Horses	560,	769,	419,	479,	1,880,	2,451,	1,672,	1,905,
Iron ore and pig	5,436,	3,942,	4,010,	5,477,	4,830,	2,902,	2,683,	3,099,
Silk, raw	14,521,	15,239,	14,059,	17,160,	11,107,	14,846,	12,773,	14,039,
„ manufactures of	32,119,	24,149,	24,732,	31,101,	16,371,	14,672,	15,087,	17,442,
Tobacco	44,592,	29,204,	28,324,	35,742,	36,851,	22,196,	21,336,	21,913,
Wool, raw	17,116,	19,547,	25,382,	26,708,	25,123,	27,444,	34,618,	32,363,
„ manufactures of	24,539,	19,996,	14,322,	20,142,	26,696,	21,963,	15,844,	20,131,
„ yarn	14,360,	11,493,	14,362,	14,839,	14,090,	9,898,	11,769,	11,225,
Total of principal and other articles — *Gulden*	552,549,	518,067,	546,662,	596,722,	549,372,	534,278,	555,262,	552,101,
Total of principal and other articles — £	55,255,	51,807,	54,666,	59,672,	54,927,	53,428,	55,526,	52,210,

EXPORTS.

Principal Articles.	Official Values.				Real Values.			
	1875.	1876.	1877.	1878.	1875.	1876.	1877.	1878.
Animals (except horses)	10,963,	16,756,	19,278,	11,905,	34,423,	63,970,	75,552,	46,278,
Coal	13,812,	14,029,	14,174,	14,950,	10,617,	10,444,	10,560,	9,050,
Flour	13,456,	18,136,	26,158,	37,154,	18,364,	24,773,	39,109,	50,928,
Glass and glasswares	26,260,	25,610,	28,042,	25,985,	19,167,	15,409,	13,710,	13,645,
Grain and pulse	33,300,	36,651,	53,058,	50,331,	61,135,	68,851,	119,395,	101,075,
Fancy wares, including jewellery	43,857,	41,692,	43,647,	56,624,	36,737,	34,694,	35,462,	46,920,
Horses	2,350,	2,806,	143,	1,664,	5,343,	9,251,	514,	6,437,
Ironwares	19,018,	15,237,	13,105,	17,317,	17,389,	14,895,	12,114,	15,008,
Linen, manufactures of	18,228,	18,183,	17,810,	14,977,	14,433,	13,914,	11,851,	9,833,
Paper, and manufactures of	11,667,	14,048,	13,745,	14,664,	9,432,	10,105,	9,625,	10,068,
Silk, manufactures of	12,503,	6,155,	4,960,	5,462,	6,835,	3,664,	3,025,	3,177,
Sugar and molasses	24,624,	36,715,	40,855,	46,198,	20,103,	33,143,	41,530,	42,966,
Timber, common	27,644,	28,350,	32,532,	30,939,	37,493,	36,442,	40,973,	38,964,
Wool	28,423,	27,823,	29,460,	22,277,	21,237,	26,665,	25,312,	16,931,
„ manufactures of	15,866,	16,555,	16,317,	19,776,	20,718,	21,314,	20,833,	25,114,
Total of principal and other articles — *Gulden*	504,467,	508,569,	550,603,	599,699,	550,859,	595,228,	666,602,	654,694,
Total of principal and other articles — £	50,447,	50,857,	55,060,	59,970,	55,086,	59,523,	66,660,	65,469,

II.—*Table Showing the Total Amount of the Imports into, and Exports from, the Various Countries of the World as Recorded in the Statistical Abstracts for Foreign Countries and the Colonies, and in other Statistical Works, the Figures being for the latest Year obtainable in each case, except for the United Kingdom, for which the Year is* 1879. [*The Year in most cases is* 1879.*]

[000's omitted].

	Imports.	Exports.	Excess of Imports or Exports. (Exports —).
A.—BRITISH EMPIRE.			
Europe—			
United Kingdom	398,123,	288,344,	109,779,
Gibraltar	—	—	—
Malta	19,490,	16,941,	2,549,
	417,613,	305,285,	112,328,
Africa—			
Gambia	190,†	207,†	— 17,
Sierra Leone	410,†	391,†	19,
Gold Coast	323,†	429,†	— 106,
Lagos	528,†	654,†	— 126,
St. Helena	97,†	37,†	60,
Cape of Good Hope	7,664,†	4,068,†	3,596,
Natal	2,176,†	584,†	1,592,
Mauritius	2,386,†	3,256,†	— 870,
	13,774,	9,626,	4,148,
Asia—			
India (31st March, 1879)	44,857,†	64,920,†	— 20,063,
Ceylon	5,029,†	4,961,†	68,
Straits Settlements	15,204,†	14,483,†	721,
Labuan	149,†	168,†	— 19,
Hong Kong		No returns	
	65,239,	84,532,	— 19,293,
Australasia—			
Western Australia	407,†	448,†	— 41,
Queensland	3,081,†	3,434,†	— 353,
New South Wales	14,199,†	13,087,†	1,112,
Victoria	15,036,†	12,454,†	2,582,
South Australia	5,014,†	4,763,†	251,
Tasmania	1,267,†	1,301,†	— 34,
New Zealand	8,375,†	5,743,†	2,632,
	47,379,†	41,230,	6,149,
Fiji	142,	169,	— 27,

* The figures for the United Kingdom include the transhipment trade and the bullion.

† Including bullion and specie.

II *Contd.*—*Total Imports and Exports from Various Countries—Contd.*

	Imports.	Exports.	Excess of Imports or Exports. (Exports —).
A.—BRITISH EMPIRE—*Contd.*			
America and West Indies—			
Dominion of Canada	17,076,*	14,894,*	2,182,
Newfoundland	1,513,*	1,233,*	280,
West Indies	5,741,*	6,267,*	— 526,
Falkland Islands	39,*	71,*	— 32,
	24,369,	22,465,	1,904,
Bermuda	247,*	70,*	177,
Honduras	160,*	187,*	— 27,
British Guiana	2,065,*	2,716,*	— 651,
Grand total, A	570,988,	466,280,	104,708,
B.—FOREIGN COUNTRIES.			
Europe—			
Russia	96,916,	100,117,	— 3,201,
Norway	7,411,	5,019,	2,392,
Sweden	13,306,	10,240,	3,066,
Denmark	11,384,	9,078,	2,306,
German Empire	186,115,†	145,827,†	40,288,
Holland	70,721,†	48,471,†	22,250,
Belgium	104,453,	91,395,	13,058,
France	240,426,	192,044,	48,382,
Spain	15,910,	17,253,	— 1,343,
Portugal	7,165,†	4,475,†	2,690,
Italy	54,345,	48,156,	6,189,
Austro-Hungary	103,617,	100,219,	3,398,
Greece	5,600,†	3,200,†	2,400,
Turkey	20,000,†	21,000,†	— 1,000,
Roumania	10,180,†	9,545,†	635,
Servia	1,500,†	1,350,†	150,
	949,049,	807,389,†	141,660,
Africa—			
Egypt	5,210,	13,999,	— 8,789,
Tunis	445,†	345,†	100,
Tripoli	535,†	520,†	15,
Algiers	10,885,†	6,075,†	4,810,
Other French possessions in Africa	500,†	640,†	— 140,
Morocco	955,†	735,†	220,
Portuguese possessions	355,†	255,†	100,
Zanzibar	630,†	365,†	265,
Réunion	1,000,†	1,280,†	— 280,
Mayotte and Nossi-bé	95,†	195,†	— 100,
	20,610,	24,409,	— 3,799,

* Including bullion and specie.

† Special trade only.

II *Contd.*—*Total Imports and Exports from Various Countries—Contd.*

	Imports.	Exports.	Excess of Imports or Exports. (Exports —).
B.—FOREIGN COUNTRIES—*Contd.*			
Asia—			
Persia	2,560,*	1,520,*	1,040,
Dutch East Indies	9,710,*	14,545,*	— 4,835,
French „	335,*	610,*	— 275,
Siam	1,405,*	2,340,*	— 935,
French Cochin China	2,335,*	4,125,*	— 1,790,
China	23,640,*	20,780,*	2,860,
Japan	7,945,*	6,095,*	1,850,
Philippine Isles	3,950,*	4,075,*	— 125,
	51,880,	54,090,	— 2,210,
Oceania (except New Zealand)—			
New Caledonia	330,*	110,*	220,
Samoa Islands	70,*	50,*	20,
Sandwich Islands	785,*	795,*	— 10,
Tahiti	160,*	110,*	50,
	1,345,	1,065,	280,
America—			
United States	97,098,	153,216,	— 56,118,
St. Pierre and Miquelon	365,*	470,*	— 105,
Cuba	9,685,*	17,750,*	— 8,065,
Hayti	1,365,*	1,415,*	— 50,
San Domingo	155,*	125,*	30,
Spanish West Indies (Porto Rico)	3,675,*	3,630,*	45,
French West Indies	2,205,*	2,650,*	— 445,
Dutch „	—	—	—
Mexico	6,000,*	6,600,*	— 600,
Central America	2,075,*	3,135,*	— 1,060,
Colombia	4,200,*	3,780,*	420,
Venezuela	3,010,*	3,220,*	— 210,
Dutch Guiana	310,*	260,*	50,
French „	305,*	20,*	285,
Brazil	18,395,*	22,955,*	— 4,560,
Ecuador	1,500,*	1,735,*	— 235,
Peru	5,880,*	9,400,*	— 3,520,
Bolivia	1,000,*	1,200,*	— 200,
Chile (see note)	4,979,†	7,871,	— 2,892,
Uruguay	3,310,*	3,644,*	— 334,
Argentine Confederation	9,347,*†	9,951,*	— 604,
Grand total, B	174,859,	253,027,	— 78,168,
SUMMARY.			
British Empire	570,988,	466,280,	104,708,
Other countries	1,197,743,	1,139,980,	57,763,
	1,768,731,	1,606,260,	162,471,

* Special trade only.

† The official values are given, and these are 25 per cent. below the real values.

III.—*Statement showing the Total Imports and Exports of the United Kingdom, including Bullion and Specie, but not the Transhipment Trade, with the Excess of Imports over Exports, and Proportion of the Excess to the Total Imports and Exports in each Year since* 1854 *inclusive.* [*See note.*]

	Total Imports and Exports, including Bullion and Specie.	Total Imports.			Exports.			Excess of Imports.	
		Merchandise.	Bullion.	Total.	Merchandise.	Bullion.	Total.	Amount.	Per Cent. of Col. 1.
1854....	318	152	27*	179†	116	23	139	40	12·6
'55....	307	144	27*	171†	117	19	136	35	11·4
'56....	365	174	27*	201†	139	25	164	37	10·1
'57....	395	188	27*	215†	146	34	180	35	8·8
'58....	354	165	29	194	140	20	160	34	9·6
'59....	408	179	37	216	156	36	192	24	5·9
1860....	425	211	23	234	165	26	191	43	10·1
'61....	417	217	19	236	160	21	181	55	13·2
'62....	453	226	32	258	166	29	195	63	13·9
'63....	503	249	30	279	197	27	224	55	10·9
'64....	539	275	28	303	213	23	236	67	12·4
'65....	526	271	21	292	219	15	234	58	11·0
'66....	590	295	34	329	239	22	261	68	11·5
'67....	541	275	24	301	226	14	240	61	11·3
'68....	568	295	25	320	228	20	248	72	12·7
'69....	569	295	21	316	237	16	253	63	11·1
1870....	595	303	29	332	244	19	263	69	11·6
'71....	687	331	38	369	284	34	318	51	7·4
'72....	730	355	30	385	315	30	345	40	5·5
'73....	745	371	34	405	311	29	340	65	8·7
'74....	721	370	30	400	298	23	321	79	11·0
'75....	717	374	33	407	282	28	310	97	13·5
'76....	698	375	37	412	257	29	286	126	18·0
'77...	723	394	37	431	252	40	292	139	19·2
'78....	673	369	32	401	245	27	272	129	19·1
'79....	665	363	24	387	249	29	278	109	16·4
1880....	732	411	16	427	286	19	305	122	16·7

* Estimated only, imports of bullion being recorded since 1858 only.

† Part estimated; as regards bullion imports, see previous note.

Note. It is greatly to be regretted that in making up the foregoing table actual figures for the imports of bullion before 1858 cannot be obtained, the imports of bullion prior to 1858 not having been recorded at the Customs House. In making up the foregoing table, I have assumed that the average imports would bear the same relation to the average exports which it did in the four following years. But so far as I can judge, this is to understate the imports, as the coinage of the four years 1854-57 inclusive, was 25 million pounds, as compared with a coinage of 16 million pounds only in the four following years. The presumption is therefore that the home consumption of bullion in 1854-57 was greater than in the four following years, and the excess of imports would be correspondingly greater. In other words, the whole excess of imports, bullion and merchandise together was probably greater in 1854-57 than it appears in the text, and the proportion of that excess to the total trade would also be greater.

IV.—*Extract from the "Statist" newspaper of 26th November, 1881, containing Tables showing the Capital, Gross Earnings, and Details of the Earnings and Expenditure per Gross Ton, of several of the principal Shipping Companies in the United Kingdom.*

1.—*Statement of the Tonnages, Values, and Values per Ton of the Fleets of the undermentioned Steamship Companies at the end of* 1880.

	Tonnage of Fleets.	Value of Fleets.	Value per Ton.
			£ s.
Peninsular and Oriental	127,060	2,212,634	17 8
Pacific Steam Navigation	86,425	1,413,869	16 7
Royal Mail Steam Packet	64,476	1,047,075	15 17*
Cunard Steamship	61,379	1,061,000	18 12
General Steam Navigation	41,102	634,286	15 3†
West India and Pacific Steamship	26,192	342,698	13 2
Mercantile Steamship	21,666	343,832	15 17
Union Steamship of New Zealand	13,700	300,500	14 6
Total (nine companies)	442,000	7,355,894	16 13
Commercial Steamship	13,568	—	—
Royal Exchange Shipping	—	143,231	—
National Steamship	—	995,135	—

* In the report, the ships are stated to be valued at 15*l.* 17*s.* 4*d.* per ton. This must exclude a portion of the tonnage given above, which comes out at 16*l.* 4*s.* as it stands.

† Excluding hulks and barges.

2.—(*a*) *Statement of the Total Income of the undermentioned Companies, with the Gross Revenue per Ton.*

	Gross Revenue.	Tonnage.	
			£ s.
Peninsular and Oriental	2,014,414	127,060	15 17
Pacific Steam Navigation	1,301,345	86,425	15 1
Royal Mail Steam Packet	708,406	64,476	11 –
Cunard Steamship	1,138,389	61,379	18 11
General Steam Navigation	523,166	41,102	12 15
Mercantile Steamship	181,385	21,666	8 7
Total	5,867,105	402,108	14 12

2.—(*b*) *Details of the Income of Three of the above Companies.*

	Freights.	Passengers.	Subsidies.	Other.	Total.
	£	£	£	£	£
Peninsular and Oriental..	975,286	592,768	482,764	19,026	2,014,414*
Pacific Steam Navigation.	805,477	471,220	22,851	1,797	1,301,345
Royal Mail Steam Packet	335,802	274,354	98,250	—	708,406
Total	2,116,565	1,338,342	603,865	20,823	4,024,165

* 57,430*l.* is to be deducted from the sum of the receipts from freights and passengers on account of losses by exchange.

3.—(*a*) *Statement of the Expenditure of the Undermentioned Steamship Companies, including all Amounts Paid, or set aside by them for Repairs, Renewals, Insurance, and Depreciation, during Periods of Twelve Months.*

	Coal, including all Charges.	Pay of Crews.	Provisions of Ships.	Repairs and Renewals.	Insurance and Depreciation.	Other Expenses.	Total.
	£	£	£	£	£	£	£
Peninsular and Oriental	422,916	221,505	171,884	250,000	348,000	446,337	1,860,642
Pacific Steam Navigation	229,971	154,741	144,329	146,376	228,970	300,351	1,204,738
Royal Mail Steam Packet	160,019	85,868	119,770	90,879	87,700	159,316	703,552
Total	812,906	462,114	435,983	487,255	664,670	906,004	3,768,932
Cunard Steamship	—	—	—	81,238	116,029	—	955,003
General Steam Navigation	80,589	—	—	51,400	37,498	—	476,585
Mercantile Steamship	—	—	—	—	40,408	—	159,000
Total (six companies)	—	—	—	—	—	—	5,359,520

3.—(*b*) *Statement of the Proportion per Cent. of Expenses to Revenue, and of the Amount Expended per Ton of Shipping.*

(1) *Proportion of Expenses to Revenue.*

	Coal, including all Charges.	Pay of Crews.	Provisions of Ships.	Repairs and Renewals.	Insurance and Depreciation.	Other Expenses.	Total.
	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.	Per cnt.
Peninsular and Oriental	21·0	11·0	8·5	12·4	17·3	22·2	92·4
Pacific Steam Navigation	17·7	11·9	11·1	11·2	17·6	23·1	92·6
Royal Mail Steam Packet	22·6	12·1	16·9	12·8	12·4	22·5	99·3
Total (3 companies)	20·2	11·5	10·8	12·1	16·5	22·5	93·6
Cunard Steamship	—	—	—	7·1	10·2	—	83·9
General Steam Navigation	15·4	—	—	9·8	7·2	—	91·1
Mercantile Steamship	—	—	—	—	22·3	—	87·7
Total (6 companies)	—	—	—	—	—	—	91·3

3.—(*b*) *Contd.*—*Proportion per Cent. of Expenses to Revenue—Contd.*

(2) *Amounts Expended per Ton of Shipping.*

	Coal, including all Charges.	Pay of Crews.	Provisions of Ships.	Repairs and Renewals.	Insurance and Depreciation.	Other Expenses.	Total.
	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
Peninsular and Oriental	2 12	1 8	1 2	1 10	2 2	5 19	14 13
Pacific Steam Navigation	2 14	1 16	1 14	1 14	2 12	3 9	13 19
Royal Mail Steam Packet	2 10	1 6	1 18	1 8	1 8	2 8	10 9
Total (3 companies)	2 12	1 10	1 8	1 12	2 2	4 8	13 12
Cunard Steamship	—	—	—	1 6	1 18	—	15 11
General Steam Navigation	2 0	—	—	1 6	0 18	—	11 12
Mercantile Steamship	—	—	—	—	1 17	—	7 7
Total (6 companies)	—	—	—	—	—	—	13 7

4.—*Statement of the Share Capital of the Undermentioned Steamship Companies, and of the Dividends Paid by them during Periods of Twelve Months.* (*Usually* 1880.)

	Share Capital.	Dividends Paid During Year.	Balance Carried Forward.	Rate of Dividend.
Peninsular and Oriental	2,900,000	145,000	4,862	5
Pacific Steamship	1,772,550	118,170	12,269	6⅔
Royal Mail Steam Packet	900,000	45,000*	—†	5
Cunard Steamship	1,600,000	82,189	18,877‡	6§
Union „	350,040	17,502	—	5
„ „ New A	73,062	3,653	—	5
General Steam Navigation	379,752	28,475	2,325	7½
„ Preference	367,538	17,917	—	4½
„ Debentures	150,000	6,604	—	4½
West India and Pacific Steam Navigation	320,000	24,000	3,612	7½
Mercantile Steamship	274,870	16,492	484	6
„ Debentures	30,000	1,500	—	5
Union Steamship of New Zealand	282,720	21,708	2,986	8
Commercial Steamship	161,888	10,523	595	6½
Royal Exchange Shipping	152,160	9,861	1,085‖	7
National Steamship	750,000	37,500	5,945	—
„ Preference	125,000	10,000	—	8
Total	10,589,580	596,094	—	5⅝

* From insurance account.

† Insurance fund is maintained at a minimum of 220,000*l.*

‡ Placed to reserve fund.

§ In the second half-year 113,750*l.* of new capital came in for dividend or interest.

‖ 1,000*l.* is placed to the depreciation fund.

V.—*Statements by different Shipowners as to Results of Voyages in particular Trades.*

[To distinguish these different statements, they are numbered A, B, C, &c., &c.]

A.

I am in receipt of your letter of ——— regarding the American carrying trade.

No one here knows more about this than Messrs. ——, and I saw one of their partners to-day and discussed the matter with him. He came to the conclusion that a fair average rate outwards would be 20*s.* per ton weight, and homewards 27*s.* 6*d.* per ton. It is very difficult to judge the outward average, from the very varied nature of the cargoes, and the homeward is also difficult from the varied character of the ships engaged. Mr. ——, however, considered that according to his judgment the above rates, multiplied by the total exports and imports in British bottoms, would give pretty accurately the amount of freight earned per annum.

B.

Annual Expenses (in £ Sterling per Net Register Ton) of Steamers carrying Passengers and Cargo in the Trade between England and Calcutta, viâ Suez Canal, taken from Actual Voyage Accounts. Three Voyages per Annum.

Steamers (valued at 20*l.* per Gross Register Ton)	Of 2,300 Gross, and 1,460 Net.		Of 3,060 Gross, and 2,000 Net.	
	Register Tonnage.		Register Tonnage.	
	In England.	Abroad.	In England.	Abroad.
	£		£	
*Wages	2·05	—	1·65	—
*Provisions, ship and engine stores, &c.	1·75	0·30	1·35	0·25
†Coals	1·23	2·46	0·90	2·70
Port disbursements, charges on cargo, &c.	1·75	1·34	1·80	1·05
*Repairs, painting, &c., hull and engines	1·03	—	0·80	—
Premiums of insurance on ship and freight	1·64	—	1·65	—
Suez Canal expenses	—	3·60	—	3·60
	9·45	7·70	8·15	7·60
	17·15		15·75	
Interest on capital, cost of management, provision for casualties and depreciation, 15 per cent. on above value	4·73		4·59	
Per ton net register	21·88		20·34	

* These items are increased in consequence of the steamers being fitted for passengers, though cost of their provisions is excluded.

† The relative cost of coals at home and abroad, depends on the quantity taken from England, with larger or smaller cargoes.

C.

Steamer of 1,800 *Tons Net Register. Value* 35,000*l.*

	Per Annum.	Per Ton Register.
	£	*s.*
Wages	2,100	23·33
Provisions	1,200	13·33
Port expenses	6,500	72·22
Repairs	1,200	13·33
Insurance	2,200	24·44
Interest on capital, 5 per cent.	1,500	16·66
Depreciation, 6 per cent.	1,800	20·00
Coal	9,000	100·00
	25,500	283·31

D.

Steamer, about 1,300 *Tons Net Register; Built* 1874; *Cost* 52,265*l., about* 40*l. per Ton. (Actual Value not stated.)*

	Per Annum.	Per Ton (Net Register).
	£	£ *s.* *d.*
Wages	3,533	2 17 6
Provisions	1,675	1 7 3
Coal	3,458	2 16 3
Port expenses	1,235	1 – 1
Repairs	1,339	1 1 9
Premium of insurance	2,104	1 14 3
Interest on capital	Not	charged.
Percentage for renewal and depreciation, 9 per cent.	4,703	3 16 6
Total	19,047	14 13 7
	Tons.	Tons.
Weight of coals	2,601	2.2.1.8.

E.

Steamer (plain Cargo Boat), say 1,050 *Net Register; Value* 25,000*l.; Engaged in Mediterranean Voyages.*

	Per Annum.	Per Net Register Ton.
	£	£ *s.* *d.*
Wages	1,575	1 10 –
Provisions	740	– 14 1
Coal, steaming and cooking	1,700	1 12 4
Port expenses	2,800	2 13 4
Repairs for year	300	– 5 8
Premium of insurance, 8 per cent.	1,800	1 14 3
Interest on capital, 5 per cent.	1,250	1 3 9
Percentage for renewal and depreciation	1,500	1 8 7
Total	11,665	11 2 –

F.

Steamer, about 2,000 Tons Gross, 1,300 Tons Net Registered; Value 29,000l., equal 22l. per Net Registered Ton.

	At Home.		Abroad.	
	Amount.	Per Ton.	Amount.	Per Ton.
	£	£ s.	£	£
Total outlay (exclusive of insurance, &c.)	4,812	3 12	9,196	7
Paid for insurance	1,900	1 9	—	—
Dividends	6,400	4 19	—	—
	13,112	10 –	9,196	7
Add outlay abroad	9,196	7 –		
Total	22,308	17 –		
Actual freight earned	21,700	17 –		

G.

Mediterranean Trade. Colliers. Actual Outgoings of certain Steamers, showing Average Cost per Gross Ton per Year for Five Years.

	1876. 13,660 Tons.	1877. 11,982 Tons.	1878. 11,012 Tons.	1879. 11,012 Tons.	1880. 11,012 Tons.	Average Cost for Five Years, per Ton.
	£	£	£	£	£	£
Wages and victualling	4·021	4·489	4·269	4·836	4·347	4·392
Coals	1·909	1·743	1·830	1·830	1·809	1·824
Port expenses	2·139	2·263	2·288	2·289	2·344	2·265
Repairs	0·996	1·102	0·908	1·000	1·112	1·024
Insurance	1·357	1·357	1·297	1·253	1·276	1·308
	10·422	10,954	10·592	11·208	10·888	10·813

Note.—Value of the steamers about 15*l.* per gross ton.

H.

Coasting Trade and very short Foreign Trade. Average Annual Cost of Steamers per Gross Ton. (Coal Trade.)

Year ending 30th September.	Name of Steamer.	Tonnage of Steamer.	Wages, Subsistence, and Stores.	Insurance.	Port Expenses.	Coals.	Repairs.
			£	£	£	£	£
1880.....	H 1.....	694	2·703	1·668	5·276	1·174	0·508
'81.....	„	„	2·646	1·160	5·276	1·109	0·648
	Total for 2 years	—	5·349	2·828	10·552	2·283	1·156
	Average „	—	2·674	1·414	5·276	1·141	0·578
1880.....	H 2.....	712	2·754	1·222	4·654	0·910	0·952
'81.....	„	„	2·734	1·348	4·000	0·634	0·564
	Total for 2 years	—	5·488	2·570	8·654	1·544	1·516
	Average „	—	2·744	1·285	4·327	0·772	0·758
1880.....	H 3.....	993	1·998	1·583	4·290	0·742	1·438
'81.....	„	„	2·112	1·305	3·881	0·842	0·525
	Total for 2 years	—	4·110	2·888	8·171	1·584	1·963
	Average „	—	2·055	1·444	4·085	0·792	0·981
1880.....	H 4.....	770	2·560	1·735	5·600	0·953	0·757
'81.....	„	„	2·584	1·262	5·800	0·906	0·791
	Total for 2 years	—	5·144	2·997	11·400	1·859	1·548
	Average „	—	2·572	1·498	5·700	0·929	0·774

Note.—Total average cost per ton per annum—H 1, 11·083; H 2, 9·886; H 3, 9·357; H 4, 11·473. Value about 15*l.* per gross ton.

I.

Iron Sailing Vessel (Five Years Old), say 1,180 Tons Net Register; Net Value 18,000l.; for a Voyage occupying say Twelve Months. (Value equal 15l. per Net Registered Ton.)

	Per Annum.	Per Net Register Ton.
	£	£ s. d.
Wages	1,180	1 – –
Provisions	630	– 10 8
Coals, cooking, &c.	20	– – 4
Port expenses	2,200	1 17 3
Repairs for year	400	– 6 9
Premium of insurance	860	– 14 7
Interest on capital	900	– 15 3
Percentage for renewal and depreciation, 4 per cent.	720	– 12 2
	6,910	5 17 –

K.

Ship of 1,800 Tons Net Register. 25,000l., equal 14l. per Ton.

	Per Annum.	Per Ton Register.
	£	s.
Wages	1,200	13·33
Provisions	1,000	11·11
Port expenses	4,500	50·00
Repairs	600	6·66
Insurance	900	10·00
Interest on capital, 5 per cent.	1,250	13·88
Depreciation, 6 per cent.	1,500	16·66
	10,950	121·64

L.

Analysis of Sailing Ships' Expenses during the Last Ten Years.

SUMMARY.

	£	s.	d.
Value per ton, net register	9	10	–
Annual outlay per ton	5	6	–
Of which outlay abroad, per ton	1	10	–
„ „ home „	1	19	–
„ Insurance	–	15	–
„ Wages	1	2	–
Total	5	6	–
Total profit per ton	1	16	–

L.—*Statement in Detail of the Particulars of Fifty Voyages of the Undermentioned Vessels in Recent Years, with the Outlay under different Heads, the Particulars Received being Reduced to the Equivalents for Twelve Months.*

East and West Indian Voyages.

Description of Ship and Class.	Register Tonnage.	When Built.	Cost Price.	Estimated Present Value.	Date of Voyage.	Wages for Twelve Months.		Premium of Insurance for Twelve Months.		Outlay in London, including Outfit, Crews, Provisions for the Voyage, Repairs, and Port Expenses, for Twelve Months.		Outlay in Foreign Ports, exclusive of Special Expense for Passengers, but including Port Expenses, for Twelve Months.	
						Per Ship.	Per Ton.	Per Ship.	Per Ton.	Per Ship.	Per Ton.	Per Ship.	Per Ton.
			£	£		£	£	£	£	£	£	£	£
Iron, A 1 at Lloyd's	1,100	1864	18,500	9,500	1869–70	1,190	1·08	786	0·71	2,864	2·60	2,584	2·35
,,	1,200	'67	18,000	12,000	'67–69	1,353	1·13	1,254	1·05	1,292	1·08	2,988	2·49
,,	1,200	'67	18,000	12,000	'69–70	1,400	1·17	968	0·81	2,288	1·91	1,838	1·53
,,	1,200	'67	18,000	12,000	'71–72	1,309	1·09	686	0·57	2,801	2·33	1,653	1·38
,,	1,100	'64	18,500	9,500	'72–73	1,348	1·23	750	0·68	2,128	1·93	2,097	1·91
,,	1,200	'67	18,000	12,000	'72–73	1,518	1·26	873	0·73	2,364	1·97	2,411	2·01
,,	1,280	'68	19,000 in 1872	12,800	'72–73	1,430	1·12	1,173	0·92	3,279	2·56	2,002	1·56
,,	1,100	'64	18,500	9,500	'73–74	1,505	1·37	889	0·81	3,267	2·97	2,602	2·37
,,	900	'64	15,200	8,500	'76–77	1,034	1·15	725	0·81	1,710	1·90	1,542	1·71
,,	900	'64	15,200	8,500	'77–78	973	1·08	472	0·52	2,071	2·30	1,372	1·52
,,	1,100	'64	18,500	9,500	'77–78	1,372	1·25	649	0·59	3,014	2·74	1,821	1·66
,,	1,200	'67	18,000	12,000	'77–79	1,234	1·03	706	0·59	1,281	1·07	3,027	2·52
,,	1,250	'63	14,000 in 1872	9,500	'77–78	1,403	1·12	674	0·54	1,944	1·56	2,771	2·22
,,	1,650	'74	35,000	19,500	'77–79	975	0·59	857	0·52	1,345	0·81	1,679	1·01
,,	900	'64	15,200	8,500	'78–79	1,094	1·22	545	0·61	2,281	2·53	1,637	1·82
,,	1,100	'64	18,500	9,500	'78–79	1,107	1·01	625	0·56	2,276	2·07	2,165	1·97
,,	1,250	'63	14,000 in 1872	9,500	'78–79	907	0·73	660	0·53	1,893	1·51	1,497	1·20
,,	1,280	'68	19,000 ,,	12,800	'78–79	1,190	0·93	717	0·56	2,334	1·82	2,591	2·02
,,	900	'64	15,200	8,500	'79–80	998	1·11	409	0·45	1,395	1·55	1,425	1·58
,,	1,100	'64	18,500	9,500	'79–80	1,150	1·05	623	0·57	1,736	1·58	1,838	1·67
,,	1,200	'67	18,000	12,000	'79–80	1,219	1·02	588	0·49	1,949	1·62	1,684	1·40
,,	1,250	'63	14,000 in 1872	9,500	'79–80	1,432	1·15	511	0·41	725	0·58	3,114	2·49
,,	1,280	'68	19,000 ,,	12,000	'79–80	1,400	1·09	693	0·54	1,737	1·36	1,707	1·33
,,	1,650	'74	35,000	19,500	'79–80	1,551	0·94	992	0·60	2,248	1·36	2,046	1·24
Average	—	—	Per ton 15·86*l.*	Per ton 9·51*l.*	—	Per ton 1·06*l.*		Per ton 0·63*l.*		Per ton 1·78*l.*		Per ton 1·77*l.*	

L.—*Statement of the Particulars of Fifty Voyages of the Undermentioned Vessels, with the Outlay under different Heads—Contd.*

EAST INDIAN VOYAGES.

Description of Ship and Class.	Register Tonnage.	When Built.	Cost Price.	Estimated Present Value.	Date of Voyage.	Wages for Twelve Months.		Premium of Insurance for Twelve Months.		Outlay in London, including Outfit, Crews, Provisions for the Voyage, Repairs, and Port Expenses, for Twelve Months.		Outlay in Foreign Ports, exclusive of Special Expense for Passengers, but including Port Expenses, for Twelve Months.	
						Per Ship.	Per Ton	Per Ship.	Per Ton	Per Ship.	Per Ton.	Per Ship	Per Ton.
			£	£		£	£	£	£	£	£	£	£
Iron, A 1 at Lloyd's	900	1864	15,200	8,500	1869–70	1,084	1·20	1,053	1·17	2,120	2·36	887	0·99
,,	1,100	'64	18,500	9,500	'70–71	1,127	1·02	803	0·73	1,847	1·68	1,155	1·05
,,	1,200	'67	18,000	12,000	'70–71	1,206	1·01	654	0·55	2,569	2·14	1,387	1·16
,,	900	'64	15,200	8,500	'71–72	1,057	1·17	491	0·55	3,167	3·52	732	0·81
,,	1,100	'64	18,500	9,500	'71–72	1,252	1·14	634	0·58	2,706	2·46	1,175	1·07
,,	900	'64	15,200	8,500	'72–73	1,106	1·23	752	0·84	1,668	1·85	959	1·07
,,	1,250	'63	14,000 in 1872	9,500	'72–73	1,406	1·12	794	0·64	2,562	2·05	1,206	0·96
,,	1,250	'63	14,000 ,,	9,500	'73–74	1,465	1·17	1,240	0·99	3,081	2·46	1,364	1·09
,,	1,280	'68	19,000 ,,	12,800	'73–74	1,456	1·14	1,529	1·19	2,268	1·77	1,599	1·26
,,	1,250	'63	14,000 ,,	9,500	'74–76	1,396	1·12	637	0·51	1,692	1·35	955	0·76
,,	1,280	'68	19,000 ,,	12,800	'74–75	1,427	1·11	806	0·63	1,968	1·54	1,751	1·37
,,	1,650	'74	35,000	19,500	'74–75	1,772	1·07	1,884	1·14	1,452	0·88	2,759	1·67
,,	1,200	'67	18,000	12,000	'76–77	1,316	1·10	851	0·71	2,622	2·18	1,223	1·02
,,	1,650	'74	35,000	19,500	'75–76	1,061	0·64	1,212	0·73	1,961	1·19	1,505	0·91
,,	1,280	'68	19,000 in 1872	12,800	'76–77	1,225	0·96	675	0·53	2,348	1·83	1,151	0·90
,,	1,650	'74	35,000	19,500	'76–77	1,322	0·80	1,103	0·67	1,898	1·15	1,535	0·93
,,	1,280	'68	19,000 in 1872	12,800	'77–78	1,295	1·01	779	0·61	2,767	2·16	1,276	1·00
Average	—	—	Per ton 16·17*l.*	Per ton 9·79*l.*	—	Per ton 1·04*l.*		Per ton 0·75*l.*		Per ton 1·83*l.*		Per ton 1·07*l.*	

L.—*Statement of the Particulars of Fifty Voyages of the Undermentioned Vessels, with the Outlay under different Heads—Contd.*

NEW ZEALAND, AUSTRALIAN, AND CALIFORNIAN VOYAGES.

Description of Ship and Class.	Register Tonnage.	When Built.	Cost Price.	Estimated Present Value.	Date of Voyage.	Wages for Twelve Months.		Premium of Insurance for Twelve Months.		Outlay in London, including Outfit, Crews, Provisions for the Voyage, Repairs, and Port Expenses, for Twelve Months		Outlay in Foreign Ports, exclusive of Special Expense for Passengers, but including Port Expenses, for Twelve Months.	
						Per Ship.	Per Ton	Per Ship.	Per Ton.	Per Ship.	Per Ton.	Per Ship.	Per Ton.
			£	£		£	£	£	£	£	£	£	£
Iron, A 1 at Lloyd's	900	1864	15,200	8,500	1873–74	1,358	1·51	1,122	1·25	2,462	2·74	1,340	1·49
,,	1,200	'67	18,000	12,000	'73–75	1,601	1·33	1,074	0·89	2,809	2·34	2,462	2·05
,,	900	'64	15,200	8,500	'74–76	1,585	1·76	729	0·81	2,408	2·68	1,524	1·69
,,	1,100	'64	18,500	9,500	'74–75	1,664	1·51	696	0·63	3,767	3·42	2,881	2·62
,,	1,200	'67	18,000	12,000	'75–76	1,597	1·33	1,258	1·05	2,414	2·01	1,660	1·38
,,	1,100	'64	18,500	9,500	'75–76	1,441	1·31	571	0·52	2,940	2·67	2,524	2·29
,,	1,100	'64	18,500	9,500	'76–77	1,614	1·47	883	0·80	3,100	2·82	2,450	2·23
,,	1,250	'63	14,000 in 1872	9,500	'76–77	1,263	1·01	517	0·41	2,372	1·90	1,540	1·23
,,	1,280	'68	19,000 ,,	12,800	'75–76	1,649	1·29	769	0·60	3,873	3·03	1,253	0·98
Average	—	—	Per ton 15·44*l.*	Per ton 9·15*l.*	—		Per ton 1·37*l.*		Per ton 0·76*l.*		Per ton 2·61*l.*		Per ton 1·76*l.*
Average for all voyages	—	—	Per ton 15·90*l.*	Per ton 9·55*l.*	—		Per ton 1·11*l.*		Per ton 0·70*l.*		Per ton 1·94*l.*		Per ton 1·52*l.*

VI.—*Statement of the Tonnage of Sailing and Steamships belonging to the United Kingdom in each Year since* 1854, *with Estimated Aggregate Earnings, less Outlays Abroad.*

Year.	Sailing.	Steam.	Estimated Aggregate Earnings, less Outlays Abroad.*
	Tons.	Tons.	£
1854	3,880,126	304,559	23,969,015
'55	3,907,888	379,020	25,224,740
'56	3,919,422	385,038	25,372,680
'57	4,075,245	416,132	26,618,205
'58	4,136,846	451,047	27,449,935
'59	4,156,270	434,987	27,306,155
'60	4,134,390	452,352	27,457,230
'61	4,230,793	504,698	28,724,435
'62	4,324,057	536,134	29,662,295
'63	4,655,984	595,773	32,216,515
64	4,847,303	695,575	34,670,140
'65	4,845,142	821,731	36,551,675
'66	4,817,595	874,415	37,204,200
67	4,770,989	899,361	37,345,360
'68	4,798,178	900,599	37,499,830
'69	4,687,706	9407,21	37,643,845
'70	4,506,318	1,111,375	39,202,215
'71	4,305,112	1,317,548	41,288,780
'72	4,145,888	1,536,075	43,770,565
'73	4,024,581	1,711,787	45,799,710
'74	4,043,955	1,868,359	48,245,160
'75	4,144,504	1,943,197	49,870,475
'76	4,195,430	2,002,538	51,015,220
'77	4,199,999	2,136,361	53,045,410
'78	4,178,789	2,313,332	55,593,925
'79	4,013,187	2,508,102	57,687,465
'80	3,799,221	2,720,551	59,804,370
'81	3,639,890	3,001,377	63,220,105

* At 5*l.* per ton for sailing ships and 15*l.* per ton for steamers. The estimate of earnings is after deduction of all outlay abroad.

VII.—*List of Public Issues of Loans and Undertakings on Account of Foreign Countries, in the Years* 1876-81.

(*a*) *Issues exclusively in the United Kingdom.*

		Nominal Amount.	Approximate Issue Price.	Value of Issue.
1876.				
COLONIAL GOVERNMENT LOANS.				£
Cape	4½ per cent.	1,000,000	98½	985,000
New South Wales	4 ,,	901,500	92½	838,888
Natal	4½ ,,	350,000	95¼	333,375
India	4 ,,	4,000,000	102⅜	3,918,500
Mauritius	4½ ,,	100,000	99	99,000
South Australia	4 ,,	552,000	94	518,880
New Zealand	5 ,,	1,250,000	100	1,250,000
Quebec Province	5 ,,	860,000	98½	847,100
Queensland	4 ,,	1,695,300	92¼	1,563,915
Cape	4½ ,,	650,000	99	643,500
Victoria	4 ,,	3,000,000	95½	2,865,000
Canada	4 ,,	2,500,000	91	2,275,000
Ceylon	4½ ,,	100,000	102	102,000
				16,240,158
MUNICIPAL.				
Dunedin City	6 per cent.	100,000	102	102,000
Otago Harbour	6 ,,	100,000	101½	101,500
Toronto	6 ,,	110,000	102½	112,750
Napier	7 ,,	75,000	100	75,000
Cincinnati	6 ,,	300,000	96½	289,500
				680,750
FOREIGN GOVERNMENT LOANS ISSUED IN LONDON.				
Chinese	8 per cent. loan	274,915	par	274,915
Swedish	4½ ,,	2,000,000	96½	1,930,000
Norwegian	4½ ,,	1,320,000	96½	1,273,700
				3,478,615
RAILWAY ISSUES.				
People's Gaslight, &c., Company, Chicago, 6 per cent.		500,000	80	400,000
Philadelphia and Reading R. R. 6 per cent		2,000,000	93½	1,870,000
Pittsburg and Connelsville R. R. 6 ,,		1,300,000	97	1,261,000
Utica, Ithaca and Elmira R. R. 6 ,,		150,000	92½	138,750
Grand Trunk of Canada, 5 per cent. debenture stock		400,000	—	400,000
Pennsylvania R. R. 6 per cent. bonds		600,000	90	540,000
Illinois Central R. R. 5 per cent. bonds		200,000	96	192,000
Albany and Susquehanna Railway 7 per cent.		200,000	102½	205,000
St. Lawrence and Ottawa, 6 per cent. bonds		150,000	90	135,000
Dutch Rhenish Railway 5 per cent.		100,000	—	100,000
				5,241,750

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Amount.	Approximate Issue Price.	Value of Issue.
1877.				
COLONIAL GOVERNMENT LOANS.				£
South Australia	4 per cent.	500,000	97½	487,500
Cape	4½ ,,	1,000,000	101½	1,015,000
Queensland	4 ,,	740,700	91	674,037
Natal	4½ ,,	550,000	96½	530,750
British Columbia		150,000	par	150,000
South Australia	4 per cent.	500,000	96½	482,500
Indian Sterling Loan	4 ,,	3,000,000	101¼	3,037,500
Straits Settlements	4½ ,,	100,000	99¼	992,500
				7,369,787
MUNICIPAL.				
Christchurch 6 per cent. loan		100,000	100	100,000
Wellington ,,		200,000	102	204,000
City of London (Ontario)		45,100	102¼	46,114
Oamaru 6 per cent. loan		65,000	par	65,000
Auckland Harbour		31,400	103	32,342
Otago 6 per cent. loan		120,600	102¼	123,314
Toronto 6 per cent. loan		51,350	104	53,404
Berlin Waterworks		350,000	—	350,000
				974,174
FOREIGN GOVERNMENT LOANS ISSUED IN LONDON.				
Portuguese 3 per cent. loan		4,000,000	50	2,000,000
Chinese 8 per cent. loan		1,604,000	98	1,571,920
Turkish 6 per cent. defence loan		5,000,000	52	2,600,000
				6,271,920
RAILWAY ISSUES.				
Bergslagernas Railway		200,000	91	182,000
Great Western of Canada Railway		500,000	par	500,000
Northern of Canada Railway		850,000	90	765,000
Great Western of Canada stock		—	—	166,400
Chicago, Burlington, and G. R. R.		300,000	89½	268,500
East India 4 per cent. debentures		230,150	100½	231,300
Baltimore and Ohio R. R.		1,600,000	88½	1,416,000
Halmsted Jonkoping Railway		150,000	90	135,000
Dutch Rhenish		200,000	par	200,000
Grand Trunk of Canada 5 per cent. debentures		—	—	300,000
				4,164,200
MISCELLANEOUS COMPANIES.				
National Mortgage and Agency of New Zealand		1,000,000	—	—
New Zealand Land and Agency Company		500,000	—	—
Anglo-American Land Mortgage Bank		200,000	—	—
		1,700,000		

VII *Contd.*—*List of Public Issues of Loans and Undertakings—Contd.*

	Nominal Amount.	Approximate Issue Price.	Value of Issue.
1878.			
COLONIAL GOVERNMENT LOANS.			£
Ceylon ..... 4½ per cent.	100,000	105	105,000
South Australia ..... 4 „	500,000	95½	477,500
Cape ..... 4½ „	1,000,000	99½	995,000
Tasmania ..... 4 „	300,000	92½	277,500
Trinidad ..... 5 „	100,000	par	100,000
Queensland ..... 4 „	1,200,000	92½	1,110,000
New Zealand ..... 5 „	3,500,000	par	3,500,000
Cape ..... 4½ „	1,000,000	96½	965,000
Natal ..... 4½ „	400,000	92½	370,000
South Australia ..... 4 „	688,500	95¼	655,797
Canada ..... 4 „	3,000,000	96½	2,895,000
			11,450,797
MUNICIPAL.			
Oamaru	60,000	102½	61,500
Melbourne 6 per cent. debentures	125,000	102	127,500
Dunedin 5 „	229,100	95	217,645
Quebec 6 „	102,739	103	105,821
Recife 5 per cent. bonds	90,000	—	90,000
Rio de Janeiro improvement	200,000	95	190,000
			792,466
FOREIGN GOVERNMENT LOANS ISSUED IN LONDON.			
Swedish 4½ per cent. loan	350,000	97¼	340,375
Norwegian 4½ „	1,700,000	95	1,615,000
Swedish 4 „	1,500,000	88	1,320,000
Portuguese 3 „	2,500,000	50	1,250,000
Egyptian 5 per cent. State Domain	8,500,000	73	6,205,000
			10,730,375
RAILWAY ISSUES.			
Great Western of Canada Railway ..... 5 per cent. deb.	350,000	80	280,000
Syracuse Binghampton and New York R.R.	350,000	100	350,000
Oude and Rohilkund 4 per cent. deb.	300,000	—	300,000
Alabama Great Southern R.R.	163,000	90	161,370
Hamilton and North West Canada	485,000	90	436,500
Brazil Imperial Central Bahia	412,000	95½	393,460
Madras 4 per cent. debentures	200,000	—	200,000
Great Western of Brazil	300,000	par	300,000
Western Railway of San Paulo	150,000	—	150,000
Great India Peninsula 4 per cent.	360,000	—	360,000
			2,931,330
MISCELLANEOUS COMPANIES.			
New Zealand Trust and Loan Company	255,000	—	—
Queensland Investment and Land Mort.	500,000	—	—
Several Cyprus Land, &c., Companies	—	—	—
	755,000		

VII *Contd.*—*List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Amount.	Approximate Issue Price.	Value of Issue.
1879.				
COLONIAL GOVERNMENT LOANS.				£
South Australia	4 per cent.	1,310,800	88	1,153,504
Queensland	4 „	1,184,800	88½	1,048,548
Victoria	4½ „	3,000,000	98	2,940,000
Jamaica	4½ „	100,000	96	96,000
Western Australia	4½ „	100,000	96	96,000
Cape	4½ „	2,615,000	96½	2,513,475
New South Wales	4 „	3,249,500	98½	3,200,718
Canada	4 „	3,000,000	95	2,850,000
Western Australia	4½ „	100,000	96	96,000
Tasmania	5 „	65,000	100	65,000
New Zealand	5 „	5,000,000	97½	4,875,000
				18,934,245
MUNICIPAL.				
City of London, Ontario	6 per cent.	66,788	101¾	65,519
Melbourne Gas Debentures	6 „	100,000	104	104,000
Quebec City (600,000*l.* New York)		—	—	—
Napier	6 per cent.	60,000	98	58,800
Port Elizabeth	6 „	100,000	102¾	102,750
Christchurch	6 „	100,000	103	103,000
Lyttleton Harbour	6 „	200,000	102	204,000
Napier	6 „	75,300	99	74,647
Bluff Harbour	6 „	—	—	—
Toronto City 5 per cent. (175,000*l.* Canada)		50,000	95	47,500
Toronto City	5 per cent.	132,100	par	132,100
Wellington City	6 „	100,000	104	104,000
New Plymouth		200,000	95	190,000
Canterbury		50,000	105	52,500
Montreal	5 per cent.	200,000	101½	203,000
Melbourne Gas	6 „	60,000	103½	57,900
Amsterdam Hill	4 „	41,666	92	38,334
City of Brussels Lottery (2,624,000*l.*)		—	—	—
				1,538,050
RAILWAY ISSUES.				
Brazil Imperial Central Bahia 6 per cent.		200,000	92½	185,000
Bolivar Railway 6 per cent. debentures		200,000	93½	187,000
Mexican Railway 8 per cent. bonds		135,000	86	116,100
Dutch Rhenish Railway		100,000	—	100,000
San Paulo and Rio Janeiro 6 per cent. deben.		164,200	96	157,632
Atlantic and Great Western 6 per cent. prior lien		500,000	—	450,000
Central Pacific Coal and Coke		150,000	90	135,000
Conde d'Eu 7 per cent. shares		225,000	par	225,000
Dutch Rhenish 4 per cent.		200,000	94	188,000
Canada Central 5 „		500,000	98½	492,500
Assam Railway		250,000	par	250,000
Northern Railway of Canada 6 per cent.		150,000	60	90,000
Western Countries (Nova Scotia) 5 per cent.		50,000	par	50,000
				2,626,232

VII *Contd.*—*List of Public Issues of Loans and Undertakings—Contd.*

	Nominal Amount.	Approximate Issue Price.	Value of Issue.
1879.			
MISCELLANEOUS COMPANIES.			£
Land Mortgage of Australasia	1,000,000	—	—
New Zealand Agricultural	500,000	—	—
,, Debentures	100,000	—	—
Liberia Coffee	75,000	—	—
Tramways Company of Germany	165,000	—	—
New South Wales Mortgage Loan and Agency	500,000	—	—
Australian Land and Pastoral	500,000	—	—
American Freehold Land Mortgage	200,000	—	—
Australian and New Zealand Mortgage	500,000	—	—
Ceylon Mortgage and Agency	500,000	—	—
	4,040,000		
1880.			
COLONIAL GOVERNMENT LOANS.			
Ceylon 4 per cent. bonds	700,000	98	686,000
South Australia 4 per cent. bonds	3,294,600	94	3,096,924
Mauritius 4 per cent. bonds	Conversion	—	—
Cape $4\frac{1}{2}$,,	1,006,500	$97\frac{1}{2}$	981,338
Queensland 4 per cent. bonds	2,000,000	$90\frac{1}{4}$	1,805,000
Victoria $4\frac{1}{2}$,,	2,000,000	104	2,090,000
Cape $4\frac{1}{2}$,,	535,400	103	551,462
Trinidad 4 ,,	150,000	96	144,000
India $3\frac{1}{2}$,,	3,500,000	$103\frac{5}{8}$	3,626,875
			12,981,599
MUNICIPAL.			
Wellington 6 per cent. loan	130,000	$103\frac{3}{4}$	134,875
New Plymouth 6 per cent. loan	100,000	par	100,000
Oamaru 7 per cent. debentures	50,000	104	52,000
Quebec 6 ,,	32,000	par	32,000
Oamaru 6 ,,	89,000	96	85,440
Timaru 7 ,,	60,000	102	61,200
Wanganui 6 ,,	60,000	95	57,000
Hobart Town 5 per cent. debentures	100,000	$103\frac{1}{4}$	103,250
Auckland 6 ,,	55,000	108	59,400
Recife Drainage 5 per cent.	100,000	$92\frac{1}{2}$	92,500
Santos Improvement	120,000	—	120,000
Invercargill 6 per cent. debentures	20,000	—	20,000
Kimberley Waterworks	350,000	—	350,000
Shanghai ,,	100,000	—	100,000
			1,367,665
FOREIGN GOVERNMENT LOANS ISSUED IN LONDON.			
Norwegian 4 per cent. loan	881,000	$97\frac{1}{2}$	858,975
RAILWAY ISSUES.			
Hamilton and N. W. 6 per cent. bonds	113,000	91	102,830
New York Central R. R. shares	5,000,000	$135\frac{3}{4}$	6,787,500
Imperial Brazil, Natal, and N. Cruz	246,940	par	246,940
S. Pacific R. R. 6 per cent. bonds	2,000,000	$99\frac{1}{2}$	1,990,000

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

	Nominal Amount.	Approximate Issue Price.	Value of Issue.
1880.			
RAILWAY ISSUES—*Contd.*			£
Conde d'Eu Railway	425,000	—	425,000
Midland of Canada	150,000	90	148,500
Chicago, Milwaukee, and St. Paul	300,000	93½	280,500
Imperial Brazil Central Bahia Railway	417,500	par	417,500
Grand Trunk of Canada Debenture Stock	1,000,000	105	1,050,000
Imperial Brazil, Natal, and N. Cruz	368,300	90	364,617
Atlantic, Mississipi, and Ohio Railway	260,000	95	247,000
Oude and Rohilkund	200,000	—	200,000
Beira Alta of Portugal	700,000	58	406,000
Minas and Rio of Brazil	450,000	—	450,000
Ottoman Railway	350,000	75	262,500
Donna Theresa Christina Railway	300,000	—	300,000
Great Western of Brazil	262,500	par	362,500
Malta Railway	60,000	—	60,000
Chicago and Tomah R. R.	309,000	110	312,090
Manitoba S. W. Railway Company	382,000	93½	357,170
			14,670,647
MISCELLANEOUS COMPANIES.			
Union Bank of England and America	750,000	—	—
Australian Agency and Banking Company	200,000	—	—
Lanka Plantations	150,000	—	—
Australian Mortgage and Agency	500,000	—	—
S. Australian Land Mortgage and Agency	900,000	—	—
S. Australian Investment Association	250,000	—	—
Spanish Agricultural and Distillery	100,000	—	—
Madulseema Coffee and Chincona	140,000	—	—
Land Mortgage Company of Syria	250,000	—	—
Manitoba Mortgage and Investment Co.	250,000	—	—
Land Mortgage of Egypt	500,000	—	—
	3,900,000		

1880.	MINING COMPANIES.	Nominal Capital Offered.
	Gold Mines—	£
January	Rio Grande do Sul Gold (Brazil)	65,700
,,	South East Wynaad Estates and Gold	100,000
February	Indian Glenrock Gold	100,000
March	Brazilian Gold Mines (Brazil)	80,000
,,	Empire Summit Gold (Colorado)	250,000
,,	Gold Coast Mining Company (West Coast Africa)	65,000
,,	Gold Company of Southern India	100,000
,,	Surinam Gold (Dutch Guiana)	300,000
April	Indian Grange Gold	100,000
,,	Balcarres Gold Mining of South India	180,000
May	Constantia Gold (U. S. Columbia)	60,000
,,	Mana Gold Company (French Guiana)	200,000
June	Devala Moyar Gold	200,000
,,	West Frontino (U. S. Columbia)	100,000

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Capital Offered.
	MINING COMPANIES—*Contd.*	
1880.	*Gold Mines—Contd.*	£
July.....	Pluto Gold and Silver Mining Co. (California)	125,000
„	Mysore Gold.....	135,000
August	Indian Mammoth	150,000
„	Colar Gold	75,000
„	Devala Provident.....	75,000
„	Callao Bis Gold (Venezuela).....	130,000
Sept.	Wynaad Perseverance Estates and Gold	80,000
„	Hungarian State Gold (Hungary).....	100,000
October	Dieu Donné Gold (Dutch Guiana)	50,000
„	Indian Phœnix Gold	150,000
„	Wala Wynaad Indian Gold	75,000
„	Ooregum Gold Mining of India.....	125,000
Nov.....	Devala Central Gold	120,000
„	Nundydroog Gold	100,000
„	Rhodes Reef Gold	190,000
„	South Wynaad Gold	100,000
„	Mysore Reef Gold	120,000
Dec.....	Potosi Gold (Venezuela).....	350,000
		4,150,700
	Other Mines –	
May.....	Rio Quito 5 per cent. bonds at 89.....	2,500,000
„	Anglo Espana Mine	150,000
August	New Quebrada Company	100,000
„	Republican Mountain Mine	50,000
	Total	7,050,700

		Nominal Amount.	Approximate Issue Price.	Value of Issue.
1881.	COLONIAL GOVERNMENT LOANS.			£
April	Fiji 4½ per cent. loan	150,000	100	150,000
„	Tasmania 4 per cent. loan	300,000	99½	289,500
May....	Cape 4 per cent.	2,000,000	98¼	1,965,000
June	New South Wales 4 per cent. loan	2,050,000	103½	2,121,750
„	South Australia 4 per cent. loan	1,360,300	103	1,401,109
„	Indian rupee 4 per cent. loan.....	3,000,000	104⅝	3,138,750
July....	Queensland 4 per cent. loan	1,053,000	100	1,053,000
„ ...	Trinidad 4 per cent. loan	100,000	101¾	101,750
„	Western Australia 4 per cent. loan	150,000	97	145,500
„	Ceylon 4 per cent. loan	575,000	103⅝	595,845
„	Jamaica 4 per cent. loan.....	200,000	98½	197,000
				11,168,204
	MUNICIPAL.			
Jan.....	Auckland 6 per cent. loan (exchange)	—	—	—
June	Otago 6 per cent. bonds	100,000	—	100,000
				100,000

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Amount.	Approximate Issue Price.	Value of Issue.
1881.	FOREIGN GOVERNMENT LOANS.			£
May....	Swedish 4 per cent. loan.....	700,000	98½	689,500
,,	Argentine 6 per cent. loan	2,450,000	91	2,229,500
June	Greek 5 per cent. loan.....	4,800,000	74	3,552,000
				6,471,000
	RAILWAY ISSUES.			
Jan....	Northern Pacific R. R. first mort.	4,000,000	104½	4,180,000
,,	Philadelphia and Reading R. R. "deferred"	6,860,000	30	2,058,000
Feb....	Chicago and Grand Trunk deben.....	225,000	par	225,000
March	Louisville and Nashville R. R. mort.	326,800	108	352,944
,,	Fort Madison and N. W. of Iowa mortgage	70,000	104	72,800
,,	Chicago and Grand Trunk mort.	160,000	109	174,400
,,	Wabash, St. Louis, and Pacific R.R.	837,500	107½	900,312
April	Atlantic and Pacific R. R. first mort.	2,000,000	105½	2,110,000
,,	Panama R. R. subsidy bonds.....	30,000	110½	33,150
,,	Norfolk and Western R. R. gen. mort.	1,000,000	107⅞	1,078,750
,,	Cape Fear and Yadkin Valley R. R.	60,000	105	63,000
,,	Indianapolis and Evansville R. R.....	222,000	96	213,120
,,	Natchez, Jackson, and Columbus R. R.	120,000	104½	125,400
May....	Pennsylvania R. R. 4½ per cent. mort.	2,000,000	104	2,080,000
,, ...	Atchison, Topeka, and Santa Fé	1,100,000	101	1,111,000
June	Oregon and California 6 per cent. bds.	1,200,000	par	1,200,000
,,	Grand Trunk of Canada ordinary stk.	2,500,000	26	650,000
,,	Quebec Central first mortgage	556,000	92½	514,300
,,	Alabama and New Orleans preferred	1,500,000	par	1,500,000
July....	St. Louis, Texas, and Gulf of Mexico	525,000	,,	525,000
,,	Central City Deadwood, &c., Railrd.	220,000	104	228,800
,,	Texas Trunk first mort.	500,000	103	515,000
	FOREIGN RAILWAYS, &c.			
Jan....	Calcutta Tramways	60,000	—	60,000
Feb....	Port of Cartagena, &c., Railway	100,000	97½	97,500
March	La Guayra and Caracas	200,000	par	200,000
,,	Dutch Rhenish 4 per cent. bonds....	100,000	97½	97,500
April	West of India Portuguese.....	600,000	par	600,000
May....	Alagoas (Brazil) Railway	300,000	,,	300,000
June	Lombardy Road Railways	175,000	,,	175,000
,,	Taltal Railway (Chili)	250,000	,,	250,000
,,	Lake Valley of Switzerland	150,000	,,	150,000
,,	Mulhausen Tramways..... ...	150,000	—	150,000
July...	Oude and Rohikund debentures	800,000	par	800,000
,, ...	Bengal Central 10*l.* shares	1,000,000	,,	1,000,000
,, ...	Havana first mortgage.....	1,000,000	,,	1,000,000
,, ...	Campos and Carangola debentures....	393,700	99	389,763
Aug.....	Assam Railways preference	350,000	—	350,000
Oct. ...	Brazil Imperial Central Bahia	313,000	par	313,000
Dec.....	Minas and Rio debentures	400,000	102	408,000
,, ...	Leipsig Tramways 5 per cent. deb....	50,000	100	50,000
				26,301,739

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Capital Offered.
1881.	MISCELLANEOUS COMPANIES.	£
May	English Bank of River Plate	1,000,000
October	Bank of Africa	500,000
,,	English Bank of Spain	1,000,000
Dec.	Union Bank of Spain and England	1,000,000
,,	British and American Bank	500,000
1881.		
January	Crédit Foncier of Egypt; Egyptian Land Mortgage 3 per cent. debentures, issued at 92 per cent.	400,000
,,	South Australian Land Mortgage 4½ per cent. debns.	200,000
,,	Land Mortgage of Egypt 5 per cent. debentures	300,000
,,	Dominion of Canada Land, &c., Company	250,000
,,	Egyptian Delta Lands Mortgage 6 per cent. bonds	390,000
,,	Berliner Grundesitz-actien-gesellschaft, 5 per cent. first mortgage bonds	200,000
,,	Compagnie di Télégraphie Sous-Marine de l'Amérique Centrale	120,000
February	Public Works Company of Egypt	400,000
,,	Oriental Telephone Company	300,000
,,	Cyprus Land Mortgage and Investment	200,000
,,	East African and Delagoa Bay	100,000
March	American Freehold Land Mortgage	300,000
,,	Anglo-American Agricultural	500,000
,,	Central Pacific Coal and Coke 8 per cent. debentures	71,600
,,	West Virginia Land and Lumber 7 per cent. debnts.	100,000
April	New Brunswick Land, &c.	513,000
,,	Australian Company	100,000
,,	British and American Land	120,000
May	Queensland Investment, &c.	150,000
,,	Fiji Land Mortgage, &c.	250,000
June	Dacotah and Minnesota Land	500,000
,,	North American Land Association	500,000
,,	Naokacharee Tea debentures	28,000
,,	Kurfürsten Avenue Land	300,000
,,	Bombay Agricultural and Manufacturing	250,000
,,	Turin Waterworks	600,000
July	Jamaica Plantation Company	100,000
,,	Vienna Omnibus Company	250,000
,,	Nice Promenade and Pier	80,000
,,	Queensland Land and Coal	120,000
,,	New Zealand Land	100,000
,,	River Plate Trust, &c., Company	1,000,000
Nov.	British and New Zealand Mortgage, &c.	300,000
Dec.	Land Corporation of Canada	250,000
,,	Campos Improvement	200,000
		13,542,600
1881.	MINING COMPANIES.	
January	Gold Mining Association of Canada	250,000
,,	Rara Fortuna Silver Mining	50,000
,,	Hoover Hill Gold Mining	120,000
,,	Organos Gold Mines	15,000
,,	Michipicoten Native Copper	100,000
February	La Concepcion Gold Mining	100,000

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Capital Offered.
1881.	MINING COMPANIES—*Contd.*	£
February	Akankoo (Gold Coast) Mining	100,000
,,	Californian Gold	130,000
,,	Haven Gold	50,000
,,	Flagstaff District Silver	160,000
March	Quartz Hill Consolidated Gold	205,000
,,	Corporation of South Australian Copper	250,000
,,	Santa-Cruz Sulphur and Copper	200,000
,,	Guayana Gold	250,000
April	Bilbao Iron Ore debenture	100,000
,,	Gold Mining Trust	250,000
,,	Sosa-y-Mendez Gold	100,000
,,	Eureka (Nevada) Silver	100,000
,,	Norway Copper	75,000
,,	Cape of Good Hope Diamond	136,350
,,	Central Jagersfontein Diamond	115,000
,,	Asia Minor	120,000
,,	Gold Hill	140,000
May	Keystone Gold	125,000
,,	New Callao Gold	75,000
,,	Anglo-Bilbao Steel Ore	60,000
,,	Victorine Gold (bonds)	100,000
,,	Kimberley North Block Diamond	110,900
June	Tocopilla Copper	120,000
,,	Newfoundland Consolidated Copper	600,000
,,	Eureka (Nevada) Silver	100,000
,,	British Australian Gold	170,000
,,	Moselle Mines	50,000
,,	Bratsberg Copper	60,000
,,	Pierre d'Or Gold	100,000
,,	Chile Gold	500,000
,,	Souback and Catir Alan (bonds)	60,000
July	Anglo-African Diamond	650,000
,,	Providence Gold	300,000
,,	North-west Bultfontein Diamond	85,000
,,	New Callao	75,000
,,	Yuba River Gold Washing	140,000
,,	Kiandra Gold	150,000
,,	Great Zaruma Gold	250,100
August	Diamond Corporation of South Africa	200,000
,,	Tapada Gold and Antimony	150,000
,,	Broadway Gold	120,000
October	Isabelle Gold and Silver	25,000
Novem.	Guinea Gold Coast	100,000
		7,592,350
1881.	MINING COMPANIES (INDIAN).	
January	Great Southern Mysore Gold	75,000
,,	Needlerock Estate and Gold	125,000
,,	Cherambadi District Gold	100,000
,,	Madras Gold	135,000
February	Indian Trevelyan Gold	150,000
,,	Tambracherry Estates and Wynaad Gold	160,000
March	Carta Para Gold	50,000
,,	North Ooregum Gold	120,000

VII *Contd.—List of Public Issues of Loans and Undertakings—Contd.*

		Nominal Capital Offered.
1881.	MINING COMPANIES (INDIAN).—*Contd.*	£
April	Wynaad District Gold	100,000
,, ...	Dingley Dell Estates and Gold	100,000
May.....	Indian, Kingston, and Sandhurst Gold	130,000
,, ...	Parcherry Indian Gold	150,000
,, ...	Alpha Skull and Cavern Gold Reefs	120,000
,, ...	Nilgiri Gold and Cinchona	120,000
,, ...	Simons' Reef Consol. Gold, 1st mortgage debentures	75,000
June	Central Wynaad Gold	100,000
,, ...	Nine Reefs Gold	100,000
,, ...	Wentworth Gold and Indian Estates	120,000
,,	Indian Consolidated Gold	400,000
,,	Wynaad Glen Gold	60,000
,,	Cootacovil Gold	1,000,000
		3,490,000
		11,082,350

(*b*) *Issues partly placed in this country.*

1876.

French Treasury bonds (? amount).
United States 4½ per cent. funded loan of 60,000,000*l.*
Portuguese 5 per cent. obligations, 306,400*l.*

1877.

Indian Government 4 per cent. promissory notes, 2,187,500*l.*
United States 4 per cent. funded debt, 140,000,000*l.*
Austrian Government gold rentes (?).
Hungarian 6 per cent. ,, 8,000,000*l.*
Russian 5 per cent. loan, 15,000,000*l.*

1878.

Russian 6 months' treasury bills for 5,000,000*l.*
Indian 4½ per cent. home loan.
Dutch 4 ,, 3,580,000*l.*
French 3 ,, redeemable rentes, 17,500,000*l.*
German loan.

1879.

Indian 4½ per cent. rupee loan, 4,166,000*l.* at 94.
Russian 5 per cent third Eastern loans, 30,000,000*l.* at 92½.
Brazil 5 per cent. gold loan, 5,000,000*l.* at 96½.

1880.

Indian 4 per cent. consolidated rupee loan, partly taken by French banks.
Russian 4 per cent. consolidated railway loan, 24,000,000*l.*
Portuguese 3 per cent. loan, 8,700,000*l.* issued at 50 per cent.
Panama Canal, 11,800,000*l.*
Northern Pacific Railway 8,000,000*l.*, taken by New York houses.

1881.

French redeemable rentes, 40,000,000*l.*
Hungarian 4 per cent. gold rentes, 16,000,000*l.*
Russian Treasury bonds, 5,000,000*l.*
Italian 5 per cent. loan, 14,600,000*l.*
Russian 5 ,, State Bank note loan, 10,000,000*l.*

VII *Contd.—Summary of List (a).*

[In thousands of pounds, 000's omitted.]

	1876.	1877.	1878.	1879.	1880.	1881.	Total.
	£	£	£	£	£	£	£
Colonial Government loans	16,240	7,370	11,451	18,934	12,982	11,168	78,145
Municipal loans	681	974	792	1,538	1,368	100	5,453
Foreign Government loans	3,479	6,272	10,730	—	859	6,471	27,811
Railway issues	5,242	4,164	2,931	2,626	14,671	26,302	55,936
	25,642	18,780	25,904	23,098	29,880	44,041	167,345
Miscellaneous companies	—	1,700	755	4,040	3,990	13,542	24,027
Mining companies	—	—	—	—	7,051	11,082	18,133
Total	25,642	20,480	26,659	27,138	40,921	68,665	209,505

VIII.—*Statement of the Foreign Trade of the United States, showing the Excess of Imports over Exports.*

(*a.*) *Total Value of Imports into the United States in each Year from* 1860 *to* 1880.

[000's omitted.]

Years (ended 30th June).	General Merchandise.	Specie.	Total.
	£	£	£
1860.....	73,673,	1,781,	75,454,
'61.....	60,272,	6,732,	67,004,
'62.....	39,449,	3,420,	42,869,
'63.....	50,695,	1,997,	52,692,
'64.....	65,926,	2,732,	68,658,
'65.....	49,738,	2,044,	51,782,
'66.....	90,586,	2,229,	92,815,
'67.....	82,451,	4,598,	87,049,
'68.....	74,469,	2,956,	77,425,
'69.....	86,980,	4,127,	91,107,
'70.....	90,825,	5,504,	96,329,
'71.....	108,380,	4,431,	112,811,
'72.....	130,541,	2,863,	133,404,
'73.....	133,778,	4,475,	138,253,
'74.....	118,209,	5,928,	124,137,
'75.....	111,043,	4,354,	115,397,
'76.....	95,988,	3,320,	99,308,
'77.....	94,026,	8,494,	102,520,
'78.....	91,052,	6,213,	97,265,
'79.....	92,870,	4,228,	97,098,
'80.....	139,157,	19,382,	158,539,
'81.....	133,874,	23,036,	156,910,

VIII.—*Statement of the Foreign Trade of the United States—Contd.*

(*b.*) *Total Value of Exports from the United States in each Year from* 1860 *to* 1880; *with Excess of Imports and Exports.*

Years (ended 30th June).	General Merchandise.			Specie.	Total.	Excess of	
	Domestic.	Foreign.	Total.			Imports.	Exports.
	£	£	£	£	£	£	£
1860	65,883,	3 612,	69,495,	10,688,	80,183,	—	4,729,
'61	42,687,	3,053,	45,740,	5,867,	51,607,	15,397,	—
'62	37,426,	2,296,	39,722,	7,676,	47,398,	—	4,529,
'63	38,751,	3,842,	42,593,	13,365,	55,958,	—	3,266,
'64	29,896,	3,195,	33,091,	21,957,	55,048,	13,610,	—
'65	28,524,	6,065,	34,589,	14,134,	48,723,	3,059,	—
'66	27,599,	6,170,	33,769,	17,925,	51,694,	41,121,	—
'67	57,842,	3,066,	60,908,	12,681,	73,589,	13,460,	—
'68	56,123,	2,617,	58,740,	19,538,	78,278,	—	853,
'69	57,326,	2,281,	59,607,	11,904,	71,511,	19,596,	—
'70	78,462,	3,368,	81,830,	12,150,	93,945,	2,384,	—
'71	89,250,	9,004,	98,254,	20,509,	118,763,	—	5,952,
'72	89,268,	3,269,	92,537,	16,641,	109,178,	24,226,	—
'73	105,215,	3,635,	108,850,	17,627,	126,477,	11,776,	—
'74	118,632,	3,510,	122,142,	13,881,	136,023,	—	11,886,
'75	104,017,	2,950,	106,967,	19,194,	126,161,	—	10,764,
'76	109,496,	3,084,	112,580,	11,774,	124,354,	—	25,046,
'77	122,848,	2,667,	125,515,	11,684,	137,199,	—	34,679,
'78 ...	141,814,	2,949,	144,763,	7,045,	151,808,	—	54,543,
'79	145,488,	2,520,	148,008,	5,208,	153,216,	—	56,118,
'80	171,655,	2,436,	174,091,	3,571,	177,662,	—	19,123,
'81	184,139,	3,844,	187,983,	3,843,	191,826,	—	34,916,

IX.—*Statement of the Imports and Exports of France, including Bullion and Specie in each of the Years from* 1860 *to* 1880.

[In thousands of pounds]

Years.	General Imports.			General Exports.			Excess of	
	Merchandise.	Bullion.	Total.	Merchandise.	Bullion.	Total.	Imports.	Exports.
	£	£	£	£	£	£	£	£
1860....	106,292	24,172	130,464	125,900	17,900	143,800	—	13,336
'61....	123,416	16,904	140,320	106,408	20,128	126,536	13,784	—
'62....	115,968	23,040	139,008	121,996	19,784	141,780	—	2,772
'63....	129,456	23,912	153,368	141,056	26,144	167,200	—	13,832
'64....	136,296	32,592	168,888	156,848	29,288	186,136	—	17,248
'65....	141,096	27,172	168,268	163,460	20,256	183,716	—	15,448
'66....	153,804	43,840	197,644	171,240	24,880	196,120	1,524	—
'67....	161,232	34,556	195,788	157,368	11,268	168,636	27,152	—
'68....	170,328	28,596	198,924	148,836	15,748	164,584	34,340	—
'69....	160,348	28,616	188,964	159,744	14,396	174,140	14,824	—
'70....	139,912	17,955	157,867	138,232	12,097	150,329	7,538	—
'71....	158,138	12,700	170,838	131,119	20,262	151,381	19,457	—
'72....	180,064	15,813	195,877	190,264	13,829	204,093	—	8,216
'73....	183,056	25,276	208,332	192,892	22,368	215,260	—	6,928
'74....	176,900	39,941	216,841	188,084	8,257	196,341	20,500	—
'75....	178,472	37,742	216,214	192,280	11,416	203,696	12,518	—
'76....	196,352	35,416	231,768	181,900	9,345	191,245	40,523	—
'77....	182,796	29,918	212,714	174,832	8,307	183,139	29,575	—
'78....	203,556	23,958	227,514	164,472	9,788	174,260	53,254	—
'79....	223,172	17,254	240,426	170,784	21,260	192,044	48,382	—
'80....	244,520	15,214	259,734	184,492	22,169	206,661	53,073	—

X.—*Summary Statement of the Weights of Commodities Imported into, and Commodities of British and Irish Produce Exported from, the United Kingdom as far as expressed in Weight, or where the Weight is easily computed from Measurements or other Quantities; with the Value of such Imports and Exports, and the Value of all other Imports and Exports in the Years* 1866-80.

Years.	Imports.			Exports of British and Irish Produce.		
	Articles which can be expressed in Weight.		Articles which cannot be expressed in Weight.	Articles which can be expressed in Weight.		Articles which cannot be expressed in Weight.
	Quantities. 1,000's of Tons.	Values. 1'000's of £.	Values 1,000's of £.	Quantities. 1,000's of Tons.	Values. 1,000's of £.	Values. 1,000's of £.
1866	7,407·3	238,804·6	56,485·7	13,520·6	141,334·9	47,582·6
'67 ...	7,599·6	222,136·9	53,046·2	14,266·0	137,479·7	43,482·2
'68 ...	8,112·9	237,515·5	57,178·1	14,886·9	134,492·4	45,185·5
'69	8,783·0	234,384·2	61,076·0	15,372·4	141,865·4	48,088·6
'70	8,927·1	233,810·4	69,447·1	16,528·7	146,966·9	52,619·9
'71 ...	9,909·9	264,646·8	66,368·7	18,368·2	161,608·2	61,458·0
'72	11,094·3	279,068·2	75,625·4	18,695·1	187,241·4	69,015·9
'73	11,137·0	289,402·8	81,884·6	17,867·7	181,958·1	73,206·5
'74	10,834·2	280,892·1	89,190·6	17,982·5	168,780·3	70,777·8
'75	12,003·4	286,413·9	87,525·7	18,517·5	156,178·4	67,287·6
'76	12,717·1	282,785·6	92,369·1	20,092·3	141,282·3	59,356·9
'77	13,432·9	299,025·9	95,393·8	19,281·6	139,363·2	59,529·9
'78	13,653·6	276,989·8	91,780·9	19,313·0	132,326·2	60,522·7
'79	14,017·2	277,832·0	85,159·9	20,922·0	129,927·9	61,603·8
'80	14,473·5	305,999·7	105,229·9	24,276·9	154,206·2	68,854·2

Discussion *on* Mr. Giffen's Paper.

[*Adjourned Meeting, 4th April*, 1882. *The President in the Chair.*]

The President: Gentlemen, before commencing the business of this evening, which is to take up the discussion on Mr. Giffen's paper road at our last regular meeting, I have to announce that one of the most eminent and most distinguished members of this Society—Mr. Newmarch—has passed away. Those of us who have been in the habit of attending the discussions on the papers from time to time read before this Society, must be aware of the great ability with which at all times he entered into those discussions, and the Society must feel that we have lost in him not only a valuable member, but a valued friend. He became a member of the Society in 1847, and from that time to a year before his death, was closely associated with all its doings. As a member of the Council, Honorary Secretary for seven years, Editor of the *Journal* for five

years, Vice-President and President, and a Trustee during the last twelve years of his life, he rendered most valuable services to the Society, and through it to the State, in the discussion of matters of great economical benefit to the country. It was my melancholy duty a few days ago, as President of this Society, having with me one of the Vice-Presidents, Mr. Heywood, and several members of the Council, to attend as the representatives of this Society the funeral of that distinguished man, and I feel I should fail in my duty if I did not ask you to join with me in recording on the minutes the very high esteem which all the members of the Society felt towards Mr. Newmarch for his valued labours, and that that record shall be in such terms as the Council approve.

The proposal was unanimously agreed to.

Mr. W. J. Harris then rose to open the discussion, and proceeded instead to read a new paper in defence of fair trade, which appears to the Editor unsuitable for insertion in the *Journal*, not having been submitted to referees in the usual manner.

Mr. D. MacIver, M.P., said he emphatically demurred to the opening paragraphs of Mr. Giffen's paper. If the quotations given from the speeches of other gentlemen were no more accurate than the reference to himself, he might well leave those gentlemen to defend themselves. He thought Mr. Giffen had over-estimated the value of shipping and under-estimated the foreign expenses. Being a shipowner himself, he knew that even half the alleged $12\frac{1}{2}$ per cent. would be very much beyond the real profits. The calculation of the value of shipping based on the tonnage was a perfect absurdity. Putting 10*l.* or 12*l.* a ton on the dead weight carrying capacity of a steamer would be about right for a new one; but all ships were not new. With regard to the decadence of American shipping, that was merely a question of material. As long as wooden ships were built, they could beat England in consequence of the possession of immense forests, but now that iron was used they could not. There was no question of fair trade or free trade or protection involved in it. If free trade were instituted in America, instead of arresting the decadence, it would destroy the little shipbuilding that now existed there. The other day Mr. Chamberlain, replying to Mr. Staveley Hill in the House of Commons, said that the annual value of our imported manufactures was 35 million pounds; but Mr. Gladstone, speaking at Leeds not many years ago, put it at 45 million pounds. The explanation of the discrepancies depended on the question as to what were manufactures. Mr. Giffen's reference to his (Mr. MacIver's) question was garbled, because a reference to "Hansard" would show that he was dealing with the statistics which Sir Henry Peek was then circulating.

Mr. Glover said the issues raised by the paper were some of the gravest he had ever discussed before the Society. During the last two or three years a ghost had been going about England alarming the busy people with statements to the effect that we were living on our capital, and a nation living on its capital was

very much in the condition of a man who was living on his vitals. If the prognostications of the fair traders were anything like accurate, there could be no doubt that the English nation would be in a very bad way. Mr. Giffen had grappled with that direct issue, and had said, "You are alarming yourselves very much with the idea that the imports are so far in excess of the exports, that the country itself is in a bad way; but do not be alarmed; you are making an improper use of the statistical tables. There is nothing so false as figures, unless they are used with great intelligence." Mr. Giffen stated in effect that from the alleged value of imports great deductions ought to be made, and to the alleged value of exports great additions ought to be made; and that if those corrections were made the ghost would be laid. The bulk of that assertion rested upon what Mr. Giffen had called invisible exports, namely, that our export tables did not tell the whole truth; and he mentioned his strong official belief, for which he gave great and overwhelming reasons, that something like 60 millions sterling must be added to the exports in order to arrive at anything like an accurate figure. Treating it as a matter of international exchange, Mr. Giffen called most important witnesses in favour of that opinion; among others, he called Mr. Newmarch as a witness, who stated that for freight 50 million pounds must be added. Another witness was Mr. McKay, a well known shipowner, who estimated the value of the item of freight at no less than 64 million pounds; and another shipowner, "A," who gave data for his opinions, put the amount at 61 million pounds. By the data given by Mr. Giffen himself the figure was 68 million pounds. He (Mr. Glover) was not concerned to say which of these witnesses was exactly correct, and he confessed it appeared to him to be not much more than very good guessing, but at the same time if it was approximately true, it destroyed the fair traders' case. He would give some reasons why he thought that Mr. Giffen exaggerated the value of that item as a matter of international exchangeable value. The paper had included subsidies paid to the steam companies, whose revenue was estimated as the data of the calculations. But the subsidies were provided by the British Parliament, and therefore could not be considered as an item of international exchangeable value. In the same way passage money was included, but the bulk of that was paid by Englishmen and consumed by Englishmen. How then could that be possibly taken as anything like international exchangeable value? He was disposed to think that all these estimates, from 50 million pounds to 68 million pounds, were greatly exaggerated. On the other hand, he considered that enough allowance had not been made for the work which was being done by English ships for foreign nations, and which work represented nothing whatever on the Board of Trade Returns. If an English vessel carried a cargo of wheat from New York to Havre, or from Bombay to Marseilles, the freight on that operation became, for all practical purposes, an item of international exchangeable value equivalent to an export from this country; but it found no place whatever in the returns. In the paper which he himself read a few weeks ago he mentioned that the tonnage which

entered several of the leading foreign States under foreign flags was about 80 million tons, and it was easy from that fact to infer what proportion of that foreign tonnage belonged to this country. He did not think it was any exaggeration to say that the proportion belonging to England would be at least 75 per cent., and considering what 75 per cent. on 80 million tonnage transaction would produce, it seemed to him quite possible that what was exaggerated in the estimates endorsed by Mr. Giffen as the international exchangeable value of freight arising out of our direct transactions, might be made up by that immense extent of transactions of which our national returns afforded no trace whatever. At the beginning of the present century the fair trade arrangements were in full force in this country. Wheat was at 115*s.* per quarter; the population being only 9 millions, and the poor rate was about 10*s.* per head of the population. All that had been changed. He was not going to say that railways and applied science had not had a great deal to do with it, but down to 1840 manufacturing distress prevailed, and agricultural distress of such an acute character that in many parts of the country farms were going out of cultivation because the pressure of rates destroyed the rents. At that time a new leaf was turned over, and now the population was 27 millions instead of 9 millions, and yet wheat, instead of being 115*s.* a quarter, was 46*s.*, and since 1840 the trade of the country had increased fourfold. He wished to ask the fair traders what they wanted, and what they expected. If England had been acting on fair trade principles, taxing imports, cotton, and wheat, did they believe that wheat would now be 46*s.* a quarter; or that if raw material had been taxed England would now have had control of the open markets of the world? Would the trade have quadrupled? Were they prepared to say it would have increased five or six fold? Were they prepared to say to the legislature, "If you reverse the system which in one generation of Englishmen has quadrupled our trade, the trade will still further increase in the next generation?" Until the fair traders could fairly grapple with what free trade had done, and could show that fair trade could do something better, it appeared to him that they were out of court.

After some remarks from Captain Thompson,

Mr. S. Bourne said he was of the same opinion as Mr. Glover, that Mr. Giffen had erred in his estimate with regard to shipping. Consulting the records of the Peninsular and Oriental Company's transactions, he found that they did not at all bear out the very large estimate which Mr. Giffen assigned as the average earnings, namely, 17*l.* a ton; that figure seemed about double what the Peninsular and Oriental with their magnificent fleet obtained; notwithstanding that Mr. Giffen had included the subsidy for postal traffic and the large amount received from passengers. But after all the question was not so much what freight was earned, as how much of the outgoing expenditure by the shipping interest was fairly to be carried either to one side or the other in taking the balances between the imports and exports. The freight which was

paid abroad for goods transported there, coming into the hands of the shipowner, was clearly applicable to the purchase of goods which might come to this country, without entailing the necessity for sending money for them or any goods to meet them. The freight on the goods coming into this country was admitted to be included in the valuation of our imports, and therefore must be struck off; and in the paper which he (Mr. Bourne) read before the Society some years ago, he put it down as an average of 26 millions a-year, to be subtracted from the value of the imports before they could be brought into comparison with our exports. Of late years it had been much more; about 37 millions was as high as he could put it for the highest year 1876. There was no doubt that something must be added to the exports under the term "invisible," but he did not think it was anything like the amount that Mr. Giffen had taken. In the first place, as regards the freight, there was great reason to believe that the outlay abroad was much larger than Mr. Giffen had estimated. Take the case of coals: the P. and O. Company had depôts all over the eastern world for coal, which it sent out to work its ships on their homeward and intercolonial passages. The whole of that coal, whether purchased abroad or not, had already figured in the list of exports. As far as could be estimated there were about 5 million tons a year of bunker coals which were not included in the exports, and he had put that amount in his table, but it was only reasonable to suppose that twice as much was sent away for use of steamers abroad. The P. and O. verily had to come home as well as to go out, and if 10 million tons of coal was taken for that purpose, it made a very large slice out of the amount of the available exports, which had been already included in the returns. The freight on that coal was considerable, and was not applicable in any shape or form to the purchase of imports for return; neither was passage money nor the subsidies paid for the postal traffic available for that purpose, and yet they constituted large items in the earnings of the ships. The only portion of the postal subsidy which could possibly come into the account was that which might be paid by foreign nations for service done for them. Then with regard to commissions, no doubt a large amount of commissions were earned in this country on goods imported, which lessened the amount that had to be sent abroad to pay for them, but if export goods were sent out on consignment, the agents had to transact the business, and none of the profit which either they or partners resident abroad derived, was at all available for the purchase of imports to be sent to this country. So that a large deduction must be made from the amount of invisible exports, apart from the fact that the amount of earnings seemed by universal testimony to be placed a great deal too high. With regard to the wide question of the balance of trade, it was admitted by everybody that certain deductions had to be made, and certain additions on the other side, and yet with all that there was a large balance against the exports. Now it did not at all follow that that balance must necessarily be to the injury of the country, because it might be earned abroad by English capital or labour. Still there was this remarkable fact, that while England was prospering and

building up trade, her exports were always in excess. America formerly took large quantities of our iron, and did not pay for it at the time, but they are doing so now by the corn they are sending here. He thought the general impression was that America had discharged a very large amount, if not the whole, of the debt which she had owed to England in that way. Those goods could not be counted twice over, first as an investment made abroad, and secondly as available for the purchase of imports. If he lent 100*l.* to a man in Australia, and sent him 100*l.* worth of goods, that money was not available to come home in the shape of imports, because it remained there to fructify. The real state of things could not be properly ascertained unless they could know what balances were going backwards and forwards for lending and repaying of loans. Of late years the balance in our favour had fluctuated from time to time, but whenever it was said that trade was good, then it was found that the excess of imports was diminishing. He thought that mature consideration of the case could not fail to carry the conviction that England had for many years been labouring under a very unhealthy deficiency of exports. It was by her export trade that England had risen to her position of influence and wealth, and she was not maintaining that trade at all in proportion to her increase of population or her necessities. Of the 33 million population in the country there were only about 10 million producers, and of those 10 million 70 per cent. were employed in producing food and the other necessities of life, and 3 million only were available for producing articles of luxury or wealth; the population was increasing rapidly, they were adding to the number of those who were available for the production of articles of wealth or export; unless they kept the whole of their export trade for the employment of the surplus population they could not be maintaining their ground. They might not now be living on their capital, but they certainly were not increasing their capital abroad, and the only remedy appeared to him to be that in some way or other they must either gradually increase the export trade or, which he believed to be the wisest course, send the surplus population to cultivate the soil in our magnificent colonies, where they might raise food and become customers for the manufactures of England as well. He thought Mr. Giffen was in error in dealing with the question of bullion. Bullion should not be stated on either side, because it went backward and forward just as the bank rate leads it; the bullion which came from the United States, Australia, or New Zealand, as the produce of these countries, should be taken into account, but the bars of gold which came from or went to Paris according to the fluctuations of the bank rate, were not entitled to be included in the estimate of the trade between the two countries. The addition of these did not make a very great difference in the balance, but it did on the percentage of calculation, particularly if all the bullion exported was put upon the side of British exports as had been done, and the percentage was calculated as though the British exports had been extended by the amount of bullion sent abroad. He could not help feeling that Mr. Giffen had fallen into error in including that

on either side. With regard to the general accuracy of the statistics, Mr. Giffen had very kindly alluded to statements which he (Mr. Bourne) had made before the Society. He thought that the first paper on the subject he had the honour to read before them demonstrated that really our returns were tolerably accurate. There certainly was room for improvement, and he hoped that Mr. Giffen in his official capacity would be able to effect some additional improvements. He thought with some of the previous speakers, that the accuracy of the statement with regard to the trade of the world was rather questionable, especially if such an elaborate argument was to be founded upon it. There was only this to be said for it, that it bore out the other conclusions by which the 60 millions were arrived at. He believed that the 60 millions were an over estimate, and that half that amount would be somewhere nearer the mark. He was prepared at any time to go into the details on that subject, but the whole question was so wide, and involved so many different phases and difficulties, that it was utterly impossible to arrive at anything like a thoroughly accurate conclusion, and all that could be done was to get as near as possible to the truth. He thought that Mr. Giffen had done good service in his search after truth.

After some remarks from Mr. Martin Wood,

Mr. Giffen, in reply, said he thought that some of the speakers seemed hardly to have read the paper. One gentleman had called attention to what appeared to be a discrepancy between the figures which he (Mr. Giffen) had given of the total imports and exports of the world and the figures which Dr. von Neumann-Spallart gave, but apparently the gentleman who made that remark had not read the footnote, in which it was stated that the figures used included bullion, which were not included in Dr. von Neumann-Spallart's tables. A most distinct reason was thus given why the two sets of figures should not agree. When such a remark was made the speaker should at least show that he had paid attention to what was contained in the paper. With reference to another point which Mr. Bourne raised, as to bullion being included, he wished to mention that when he was preparing the paper he had two tables before him—one without bullion and one with. It was a matter of choice to him which he used, and he preferred the one with the bullion, as being on the whole, for certain purposes for which the table was required in the discussion, more accurate than the one without the bullion. Coming to some points of substance which had been touched upon, principally by Mr. Bourne and Mr. MacIver, he was bound to say that, having listened to all that had been urged by way of criticism of some of the figures which he had given with special reference to shipping, he did not think that they had proved in the slightest degree that there was any exaggeration. He paid very great respect to what Mr. Glover stated, and he would like to go into the matter with that gentleman a little more in detail; but the points that he had mentioned were not sufficient to qualify the figures which had been used in the paper.

Mr. Glover had said that the subsidies were part of the earnings of steamers, but the subsidies paid by the United Kingdom only amounted to 700,000*l.* or 800,000*l.* per annum. They were a mere fraction in dealing with a question of this kind. If they deducted the subsidies from a round sum of 60 or 65 million pounds sterling, it was not a matter to be taken into account at all. [Mr. Glover said he quite agreed with Mr. Giffen that the 700,000*l.* for subsidies would reckon for nothing in the account, but the subsidies were included in the statement of certain companies' accounts, and those accounts were reduced to a rate per ton of earning, and that rate applied to the whole British trade made a difference.] Mr. Giffen said that, although in some companies the subsidies figured as a very important item, yet the gross earnings of those companies were not much larger than those of some other companies which had no subsidies. The inference from that appeared to be that those companies obtained the subsidies for doing a very special service; they were obliged to run constantly; they were not able to carry the goods that other companies did, and their gross earnings were not more than those of other companies. Enough companies were dealt with to show that the gross earnings per ton generally were what he described. That was a very important point in the matter. Considering the figures which he gave for a great many other companies in the paper, he thought that that point ought to have received a little more attention than it had done. His paper was not one on shipping, and it would have been impossible for him to show how every calculation was arrived at; but he thought that the criticisms proved that there had been no exaggeration in the estimates he had made. If the gross earnings of the steamers were at all what had been stated, not only for the subsidised companies but for others, then his final figures were very near the mark, and the only deduction to be made in connection with the subsidised companies was 600,000*l.* or 700,000*l.* The subject of passengers was by no means omitted from the paper, and he had pointed out that a very large part of what was paid by passengers was really paid on foreign account. Mr. Glover had said that passengers were chiefly English people, but in spite of that gentleman's great experience as a shipowner, he (Mr. Giffen) did not think that that was a very correct statement. Perhaps Mr. MacIver would be able to say whether in the American trade for instance, English passengers were or were not the bulk of the passengers. So far as emigrants were concerned that might not be so, but he did not think one-half the cabin passengers were English people. But that was not the whole point. The earnings of the passenger steamers which belonged to the United Kingdom included the earnings from passengers who did not come to the United Kingdom, those who travelled between foreign places, to a very large extent, and a large amount of money was earned in that way, and the sum earned in that way, less the outlay abroad, had to come home: it was a credit to the people of the United Kingdom. Mr. Glover seemed also to have misunderstood the figures on one point. He had spoken as if the estimate of 60 million pounds of freight earned was for the direct trade of the United Kingdom, and

on that ground he taxed it with exaggeration, but it really included the indirect trade to which Mr. Glover had alluded as redressing the balance. He thought if Mr. Glover again looked at the figures he would see that this indirect trade was included. He did not quite follow some of Mr. Bourne's remarks, especially when he stated that in his opinion a sum of about 30 million pounds ought to be substituted in place of the 60 million pounds which were given as the gross earnings which came home of the English fleet. [Mr. Bourne said his point was not the question of the earnings of the fleet, but that not more than 30 million pounds could be applied to the rectification of the balance between exports and imports.] Mr. Giffen said he understood that Mr. Bourne maintained that the earnings of the fleet, less the outlay abroad, were not a legitimate set-off, but he (Mr. Giffen) stated as a proposition in bookkeeping that in a debit and credit account of this kind the earnings of the mercantile fleet of the United Kingdom, less what was spent abroad by the shipowner, must be taken as a credit and a set-off to any other debit such as imports. He would like to know if Mr. Bourne disputed that point, and what deduction there ought to be besides the outlay abroad. Mr. Bourne said that he thought the deduction from the imports would amount to about 37 million pounds. Even if that were so it would go a long way indeed to rectify the balance, and that was just the very way in which he used the calculations which Mr. Bourne gave in his former paper. The second table in the paper had been a great deal misinterpreted. It seemed to have been thought that that was the main part of the argument, whereas it was really used as introductory to the rest of the subject, and to prove one important point, namely, that taking the statistics of all countries with all the discrepancies and all the differences, it would be found that there was an excess of imports over exports. That had been going on for many years, and was surely a very important fact in the study of the question. That was the primary purpose for which he used the table, and though no doubt the figure was not quite accurate even perhaps to 10 million pounds, yet taking the actual accounts which the different countries published, there was an excess of imports over exports. His inference from that was that the usual plan being to value the imports at the place of arrival, and the exports at the place of departure, the difference was the cost of conveyance. The table was merely used as introductory to a great many other statements on the subject, and it would have been inconsistent with the object of the paper to have used it in any other way. His very argument was that one set of figures only ought not to be used when two or three could be obtained, derived from different sources, thus checking and helping each other, and giving a true picture of what the facts really were. To have dealt with emigration as Mr. MacIver suggested, would have been foreign to the subject of his paper, which was imports and exports. It did not seem to him to have any connection with imports and exports, unless it was supposed that emigrants were a very wealthy class, and were taking capital out of the country as well as themselves; but as far as he knew they took no capital out of the country, or very little except what they

had on their backs or in their pockets. Coming to some points which perhaps were a little irrelevant to the subject of the paper, he wished to refer to what Mr. Harris had said in the beginning of his long paper, which was really a fair trade essay. Mr. Harris seemed to think it a matter of charge against him that he had changed the subject of his papers at the Statistical Society, and was not once more dealing with the question of accumulations of capital. In his opinion that was not a proper way of discussing these matters. The subject of the paper was quite large enough without any reference to such a different point as the accumulations of capital, but he would be glad to deal with that question also on another occasion. He did so in 1878 or 1879, using the figures of 1875, which happened to be the latest available at that time. It would not be safe to take an interval of less than ten years, and when the period arrived he hoped to deal with the subject again. No doubt since 1879 there had been a very large increase of capital in the United Kingdom. It might be possible that certain kinds of property had depreciated, and that the money income from them had diminished, but that was really at bottom a very different question from that of the diminution of capital in the United Kingdom. In his former paper on the accumulations of capital, he assumed that there had been no fall of price in the interval, that the money values at one time could be compared with those at another time, and if it should be found again that no such disturbing element existed, he undertook to say that an enormous increase of capital would be shown between 1875 and 1885. They might be quite sure that mills, factories, agricultural equipment, ships, railways, houses, &c., had not diminished as a whole, but very largely increased, and that was what was really meant by capital, apart from the possibility of putting a money value upon it. With regard to Mr. MacIver's complaint of the reference to his question in the House of Commons, he must repeat that there was an inuendo in that question, and that there was only one way of replying to it. Mr. MacIver had also referred to officials of the Government writing controversial papers, but there was nothing in the paper to render it inappropriate to be read before the Statistical Society, and if Government officials were not to have any liberty in discussing matters of statistics from a scientific point of view, their utility would be very largely diminished. One of the former secretaries of the Society, Mr. Purdy, and one of the former presidents, Dr. Farr, were both very eminent Government servants, and if they had been prohibited in the discussions in which they took part, and in the papers which they read, from making use of published official information, and of the experience they had gained, the country would have suffered a great loss. Government servants who had to do with statistics should surely try to diffuse their information, and not keep it all to themselves.

The PRESIDENT proposed a vote of thanks to Mr. Giffen for the extremely able paper he had read. He had brought forward a subject of vast importance, which was capable of discussion not only at the meetings of the Society but elsewhere, and therefore it

was unnecessary to occupy any more of the time of the Society with respect to it. It was too large a subject to remain in exclusive possession of the Statistical Society, and he trusted that it would be fully discussed in other places. Mr. MacIver said that the matter in which he was so much concerned with regard to the question of fair trade and free trade was this, that this country was being made dependent for its supplies of food upon the United States and Russia; but Canada, India, and Australia might be developed to any extent, and besides, in England itself there were reserves of grassland which at any time, if necessity should arise, would be brought into play, and would to a large extent supply any deficiency caused by the lack from America.

The resolution was agreed to.

Mr. Giffen thanked the meeting; the resolution, he said, was some reward after a good deal of labour.

Mr. Hyde Clarke having been precluded from speaking by the closing of the discussion, sends the following remarks:—In bearing full testimony to the excellence of the contribution of my learned and distinguished friend, that excellence constitutes an objection to the extraneous matter which he has introduced. To a paper of a high scientific character he has thought fit to append a polemical introduction, well suited for a magazine article, and out of keeping with a Society like ours. It is no business of ours to attack fair traders, or even to mark them out for statistical delinquencies, of which free traders present similar examples. We are not called upon to profess a belief in the theory of free trade as a religion, or to excommunicate those who, like all free traders, modify it in practice, or even those who altogether reject relative free trade. The introduction of these controversial topics has diverted the discussion from the important matter of the paper, and interfered with the practical examination it has only partially received from Mr. Glover and Mr. Bourne. Free trade or fair trade has very little to do with the great development of our commerce, or with the constitution of it; and much more weight is to be given to the effect of the gold discoveries for instance, or the opening to enterprise of the Pacific world. A cause not less efficacious has been many times named by me, and that is the rise in prices consequent on the advance of international transit by steam on sea and land. The substantial matter of Mr. Giffen's paper most deeply concerns the national interests, and on the whole he has given us an able presentment, of which, while we may differ on individual portions, we may accept the general estimates. As to his calculations of subscriptions to foreign loans and enterprises, they appear to me to require much modification, but he is justified in placing at a high rate the returns on foreign investments. What the amount is it is most difficult to state, as in the case of coupons on foreign stock it is notorious that they are sold. As to the returns on industrial

enterprises and on trade carried on abroad, they are subject to various conditions. Some of the returns are directly in goods. It is to be remarked that a portion of our exports consists of exports to be applied to investments as capital, which are on different conditions from exports for trade or temporary consumption. In the former case there may be no immediate import to represent the capital, and yet there may be ultimately a continuous import on the transaction. Thus a variety of obscure circumstances contribute to the production of the results. Coming to one main branch of Mr. Giffen's investigations, our great shipping business, it is useful to notice the very great revolution brought about, not by free trade or protection, but by the exertions of our inventors and contractors. Some years ago we imported foreign timber for our hulls, timber for spars, material for sails, rigging and cables, but now our ships are of home production. The application of iron and steel, the invention of the chain cable by Sir Samuel Brown, of wire rope by Smith, the adoption of the steam engine, the propeller, the screw, and the steam crane, relieve us from dependence on the foreigner, and have given us advantages even against the timbered countries. This greatly increased trade could not be worked without coal, which acts in substitution of much foreign labour. Thus the home interests have of late years been put under better conditions, and we have received compensation for possible disadvantages on our food imports, and the disasters of our agriculture. A very useful addition to the Board of Trade returns, more than once proposed by me, is a return of freight tons of imports and exports, from which some calculation could be made of the relative condition of our shipping interests. Indeed, the development of our home resources is particularly deserving of the watchful care of the Statistical Society. To this department of inquiry many most valuable contributions have from time to time been made by our Fellows, and I cannot but regret that effect has not been given to the propositions made by me over and over again in the last ten years, that there should be two meetings instead of one in each month, one to be devoted to statistical subjects, the other to subjects of political economy. The abiding lesson of Mr. Giffen's paper is his inculcation of caution in the adoption of figures, percentages, means, and averages. He advocates the exercise of a higher power of reasoning in the suspension of our judgment, where need be, instead of yielding implicit faith to statistical apparatus, regardless of its constitution, or without reference to its first application.

With reference to these remarks of Mr. Hyde Clarke's, which he had not the opportunity of noticing at the end of the discussion, Mr. Giffen states : "I am much obliged to Mr. Hyde Clarke for his contribution, and should agree with a great deal that he has said, but I demur to his criticism of the paper as a controversial one. On the contrary, I maintain that it is purely statistical, and if I have drawn my illustrations of bad statistics largely from the writings or arguments of fair traders, I maintain that I am justified in doing so, and thus to show what the incorrect use of statistics is. The only question is whether I have adequate grounds for my criticism,

and it is not to the point to say that free-traders also use bad arguments; while in point of fact some of the statistical arguments of free-traders are criticised in the paper. Still we cannot always avoid controversy, if we are to do our own work properly. Unless our illustrations are drawn from life, our proceedings will not be of interest, and if we find controversies going on in which statistics are largely used, it is part of our functions as a Society to discuss the methods employed, and see whether they are legitimate or not. To this object I confined myself most strictly in the paper, which must now be left to speak for itself. I wish only now to add to my remarks at the end of the discussion, which is necessarily given here in a very condensed form, and with the omission as much as possible of all irrelevant matter, or matter which was introduced contrary to the rules of the Society, that not a single attempt was made in the discussion to dispute any one of the conclusions as to the method of statistics, or to show that the practices I selected for condemnation were to be justified. I think this is the best answer to Mr. Hyde Clarke's complaint of the controversial character of the paper. I take the opportunity of expressing my agreement with him as to the expediency of increasing the number of meetings for discussion."

The National Expenditure *upon* Alcohol.

By Stephen Bourne, Esq.

[Read before the Statistical Society, 18th April, 1882.]

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If, as is set forth in the constitution of this Society, "it was established to collect, arrange, digest, and publish facts illustrating "the condition and prospects of society in its material, social, "and moral relations," there can be no more fitting object to which to direct the attention of its Fellows than that which is indicated by the title of this paper. That the material condition of the people of this country is most seriously affected by the drinking customs of society, and that its future prospects are imperilled by a continuance of these customs, is the universal testimony of statesmen, judges, medical men and economists, no less than of clergymen and philanthropists. That the consumption of intoxicating liquors exercises a most important influence upon the social relations of all classes of the community, cannot be doubted by any who are conversant with the effects it produces in the homes and the habits of both rich and poor. There is scarcely a family whose history does not afford evidence of the moral delinquencies resulting from some one or more of its members sacrificing health, happiness, and character to the ensnaring indulgence of drink. To trace out the course of these various results is not the province of this Society, but to inquire into the facts on whose evidence they rest, and to collect such proof of this wide spread evil as admit of being treated by the numerical method, is clearly within the range of those duties which belong to such a body as ours; and seeing the extent of the evil which exists, and the lamentable influence it exercises upon the national prosperity, it is of the utmost importance

that the figures which illustrate its progress should be studied and criticised. Thus stamped with authority, they will not fail to be recognised by those who have not the time or the opportunity to ascertain the truth or otherwise of the statements on which their appeals for the promotion of temperance are grounded. An additional reason why this matter should be brought under our notice is to be found in the widely divergent opinions put forth by members of our own body, and the violation of economic principles in the deductions drawn from but partial investigation, which are given forth to the world and constantly proclaimed as absolute truths. It will be in the recollection of our members that the programme for the session of 1880-81 gave promise of a paper on this subject from the pen of a prominent member of the sister society in Manchester, whose name also is numbered amongst the Fellows here. Personally it is matter of regret to me that the paper so offered was not read, for though full, as I venture to think, of unsound deductions, it would have perhaps been better that the truth should have been elicited here rather than that statements of, to say the least, doubtful authenticity, should have been publicly promulgated without the necessary qualification. I allude to the writings of Mr. W. Hoyle, from whose recent letter to the "Times," 11th March, I quote as follows :—

"Our Annual Drink Bill.—Along with the Board of Trade returns for February, we have also the Excise returns, which enable us to calculate the expenditure upon intoxicating liquors during the year 1881. The following are the particulars thereof. I also give the figures for 1880 :—

	1881.	1880.
	£	£
Beer consumed, 970,788,564 gallons, at 1*s.* 6*d.*	72,809,142	67,881,673
British spirits, 28,730,719 „ 20*s.*.....	28,730,719	28,457,486
Foreign „ 8,295,265 „ 24*s.*.....	9,954,318	10,173,014
Wine, 15,644,757 gallons, at 18*s.*	14,080,281	14,267,102
British wines (estimated) 15,000,000 gallons at 2*s.*	1,500,000	1,500,000
	127,074,480	122,279,275

"The total expenditure upon intoxicating liquors of all kinds during the past ten years has been 1,364,818,357*l.*, or, in round numbers, 136,500,000*l.* yearly. But if the brewers' corrections be made, it will give 143,600,000*l.* as having been spent upon intoxicating liquors during each of the past ten years, or a total of 1,436,000,000*l.*—a sum nearly twice the amount of our national debt. And let it be borne in mind that these figures in no way include any of the indirect costs and losses which result from drinking. These will amount at the very least to another 100 million pounds annually, giving a total cost and loss to the nation from our drink expenditure of over 240 million pounds yearly."

I.—*Personal and National Expenditure.*

Now, although strongly of opinion that the above 127 million pounds is setting the sum of individual expenditure too high, and that probably 100 million pounds would more nearly represent the aggregate of the sums which in the course of the year pass out of the pockets of the consumers into the hands of those from whom they purchase the drink; I do not propose to calculate the precise amount at which it may be estimated. The inquiry would be difficult, because of the variation in the price paid for the drink according to the place or circumstances under which it may be obtained. The man who buys each glass from the publican or the hotel keeper, must necessarily pay much more per gallon than the one who takes it from a cask or bottle at home, and it would be impossible to ascertain how much is drawn from each source. Mr. Hoyle's estimate is supported by the calculations of Professor Leone Levi in a report of a committee of the British Association, with which I was also associated, presented to that body at its meeting last year in York, viz., "The Appropriation of Wages," which will be found full of the most interesting facts and speculations as to the mode in which the earnings or income of the people are expended. The Professor estimates the annual consumption for 1880 to have been:—

	£
Beer, 1,000,000,000 gallons at 1*s.* 6*d.*	75,000,000
Spirits, 40,000,000 „ 20*s.*	40,000,000
Wines, to have cost	9,000,000
	124,000,000

which total very closely agrees with Mr. Hoyle.

The professor whilst thus assuming that the collective expenditure of the respective individuals amounts to this sum—puts the "original cost of home produce and imports" no higher than 42 million pounds. The difference between the two being the contribution to the revenue and the costs of distribution. On the other hand, Mr. Hoyle speaks of the personal and the national expenditure as one and the same thing; as he expresses it, "the "total cost and loss to the *nation* from our drink expenditure." This will be even more apparent to be his meaning from the following extract from his paper read at the same meeting of the British Association, on "The Economic Influence of the Drinking "Customs of Society upon the Nation's Well-being," when the soundness of his conclusions was disputed by Dr. Levi and others.

"The next table I will give shows the aggregate direct and indirect loss of wealth resulting from the drinking habits of the population of the United Kingdom during each decade from the year 1830 to 1879 inclusive.

Ten Years ending	Direct Expenditure.	One-half of Indirect Loss.	Total.
	£	£	£
1839	762,698,754	381,349,377	1,144,048,131
'49	717,208,512	358,604,256	1,075,812,768
'59	817,041,512	408,520,756	1,225,562,268
'69	1,020,677,801	510,338,900	1,531,016,701
'79	1,359,887,808	679,943,904	2,039,831,712
	4,677,514,387	2,338,757,193	7,016,712,508

"The following table shows the wealth which would have accrued to the population of the United Kingdom, if the money wasted, as shown above, by the drinking habits of the people during each decade of the past fifty years, had been invested at 5 per cent. per annum, simple interest. It illustrates very powerfully the cumulative loss of wealth owing to our drinking customs :—

£			£
1,144,048,131	from 1839 to 1879, forty	years at 5 per cent....	2,288,096,262
1,075,812,768	„ '49 „ '79, thirty	„	1,613,719,152
1,225,562,268	„ '59 „ '79, twenty	„	1,225,562,268
1,531,016,701	„ '69 „ '79, ten	„	765,508,350
2,039,831,712	„ say for four	„	407,966,342
7,016,271,580			6,300,852,374

"Adding this interest to the principal sum we get a total of 13,317,123,954*l.*, being the amount which has been lost to the nation in material wealth by our drinking habits during the past fifty years.

"In a paper read before the Statistical Society in January of 1878, Mr. Giffen calculates that the total capitalised value of all the property in the United Kingdom amounts to 8,500,000,000*l.*, so that it will be seen that had the money which has been expended in intoxicating liquors during the last fifty years been expended as it ought, the nation's wealth might have been double what it is, with nearly 5 thousand million pounds to spare."

Apart from any question of the accuracy of the data from which these surprising amounts are worked out, it seems to me that the fallacy of the assumption that the "personal" and the "national" expenditure are identical is self-evident. The money which the individual expends is not lost but simply transferred to the pocket of another. The liquor for which he gives his coin, when consumed is gone, and the loss to the nation in an economic sense is the exact amount which has been expended, in its production if of home manufacture or its purchase if procured from abroad. To set forth as near as may be what this will in the aggregate amount

to, is the first subject on which I propose to treat; premising that it is with no desire to underrate the efforts which Mr. Hoyle is making in the noble cause of temperance reform, or with any desire to decry the spirit in which he pursues the work, but in the endeavour to correct the errors into which, as it seems to me, he falls, that I undertake this investigation. Rather do I wish to strengthen the hands of those with whom I am, as he is, working together, though not altogether on the same lines, by ascertaining what is the truth, and so avoiding exaggerated statements and untenable arguments, in the prosecution of that which I consider without doubt to be the most prominent and the most serious conflict of the day. A simple illustration will show wherein the difference lies. A master shoemaker pays his workman 5*s.* for working up 10*s.* worth of leather into a pair of boots, which instead of selling for the sovereign a customer is ready to give, are dropped into the fire, where they are utterly consumed. He has lost not 20*s.*, but 15*s.*, for the smaller sum will procure him another pair. The nation is the poorer for the leather which is lost and the time wasted; but not by the 10*s.* and the 5*s.*—only to the extent which its resources must be drained upon to grow and prepare another piece of leather, and support the workman during the hours he will have to spend in making another pair. One man buys a bottle of wine for 2*s.* 6*d.*, which he pays in cash, another purchases exactly the same article for 3*s.* of a different dealer. On Mr. Hoyle's principle that the price paid measures the nation's loss, it would vary 20 per cent., whereas the actual outlay in each case is the same.

It will scarcely be necessary to follow the writer through the calculations of supposed savings and accumulations. The direct expenditure includes the revenue, which would not have been collected had it not been required for spending, and though some allowance for it is made on the presumed indirect expenditure, it is altogether too vague. Then the investment of such large sums at 5 per cent., or any rate of interest, would clearly be impossible. The nation would only gain by the use of them as capital in promoting industries, the profit from which would result in some actual accumulation or enjoyment of wealth. This is far too uncertain for calculating, as is done so close as even to units of pounds.

II.—*Progress of Consumption.*

Before, however, pursuing this analysis, let me lay before you two or three tables depicting the progress of consumption during the last twenty-five years. To go back farther would involve questions as to the data being really similar: indeed, there is great difficulty

in showing it correctly even for this period. For one reason, the changes from malt to beer duty, and in the mode of ascertaining the amount of proof spirit, have deranged the calculations for the last two years; whilst as regards foreign produce, the alterations in the ratings for duty, and in the practice of obtaining the valuation, have precluded absolute identity. Again, the quantities for the several years may not be quite correct, the two departments of Customs and Excise making up the accounts at different periods, rendering it difficult to show the exact proportions of each year. Some of the accounts are made up for the year ending on the 31st March, others to the 30th September, and others at its natural termination on 31st December. All that can be done is to add together each item for a complete year, though thus they will be overlapping each other, and therefore the comparison between any two years near together must not be relied on; yet the general progress is correct.

In the first table are shown the quantities of each description, separating the foreign from the home manufacture, classifying the spirits, wine, and beer, but reducing the whole to the quantity of proof spirit which, as the result of careful calculation, may have been actually consumed. Spirits are charged for duty at the proof gallon, wine at the liquid gallon according to certain ranges of strength, which have been duly considered, and the average taken on the actually ascertained degrees of spirit in the importations of one specific year (1875). Beer until recently has been assumed from the quantities of malt consumed, at the rate of two bushels to the barrel of 36 gallons, and its strength computed as 10 degrees of proof spirit in each gallon, that is, one-tenth the alcoholic strength of spirits as charged for duty. It will be noticed that there has been a progressive increase quite out of proportion to the growth of population up to 1876, about which time the consumption reached its maximum. Since then there has been a decline; but owing to the changes in the mode of levying the duty, too much dependence must not be placed on the figures for 1881. Malt duty was charged before brewing, with some credit for payment of duty, and there were drawbacks to settle. Beer is charged when brewed, and paid at once or soon after.

TABLE I.—*Quantities of the several Descriptions of Alcoholic Liquors taken for Consumption in each Year from* 1857 *to* 1881, *showing the Total Quantity of Proof Spirit contained therein.*

[In millions to two decimals.]

Year.	Foreign.			Home.		Equivalent to Proof Spirit.
	Spirits.	Wine.	Beer.	Spirits.	Beer.	
	Galls.	Galls.	Galls.	Galls.	Galls.	Galls.
1857	4·73	6·60	0·11	23·56	632·16	93·79
'58	4·58	6·27	0·11	23·99	672·84	98·01
'59	4·93	6·78	0·12	22·60	669·24	96·78
'60	5·52	6·72	0·13	24·44	709·56	103·23
'61	5·19	10·69	0·11	19·64	684·72	97·02
'62	5·19	9·76	0·10	19·94	704·16	99·03
'63	5·57	10·42	0·06	18·88	705·24	98·62
'64	6·30	11·40	0·13	19·42	713·52	101·04
'65	6·74	11·99	0·11	20·38	792·72	110·53
'66	7·80	13·24	0·08	20·98	892·08	122·28
'67	8·34	13·67	0·14	22·15	885·96	123·44
'68	8·40	15·06	0·14	21·02	855·00	119·58
'69	8·17	14·73	0·18	21·11	864·72	120·39
'70	8·44	15·08	0·18	21·98	883·44	123·47
'71	8·93	16·14	0·15	22·96	931·68	130·06
'72	9·07	16·77	0·16	24·59	999·36	138·81
'73	10·26	17·91	0·18	27·56	1,051·56	148·46
'74	10·68	17·17	0·17	29·31	1,082·52	153·56
'75	11·85	17·24	0·17	29·82	1,096·20	156·63
'76	11·55	18·54	0·18	30·30	1,143·72	161·71
'77	10·73	17·57	0·21	29·80	1,132·92	158·99
'78	10·55	16·17	0·22	30·28	1,138·68	159·45
'79	9·58	14·80	0·25	28·93	1,055·16	148·33
'80	8·53	15·75	0·38	27·29	1,091·52	149·42
'81	8·30	15·64	0·46	28·80	970·78	138·60
Total	199·93	336·11	4·23	609·73	22,359·46	3,151·23
Average	8·00	13·44	0·17	24·39	894·38	126·05

Table II gives the revenue derived from the duties levied on each description of liquor for the same period, with the ascertained population, the total amount of duty, and the average sum contributed per head. Here again 1876 yields the maximum, thus corroborating the larger consumption of the previous table, and dividing

to exactly 1*l.* for each person. The figures for 1881 are so near to those of 1880 as to justify the observation before made as to the comparison of that year with its predecessor.

TABLE II.—*Revenue Derived from the Consumption of Alcoholic Liquors in each Year ended* 31*st March,* 1857-81, *with the Average Amount per Head of Population.*

[In millions of £'s to two decimals.]

Year.	Population.	Spirits.	Wine.	Beer.	Licenses.	Total.	Per Head in Shillings.
		£	£	£	£	£	Units and one decimal.
1857	28·19	11·44	2·02	6·11	1·05	20·62	14·6
'58	28·39	11·26	1·73	5·79	1·06	19·84	13·9
'59	28·59	11·23	1·76	6·01	1·06	20·06	14·0
'60	28·78	12·30	1·63	6·72	1·08	21·73	15·1
'61	28·97	11·85	1·14	6·36	1·10	20·45	14·1
'62	29·20	12·27	1·10	5·87	1·10	20·34	13·9
'63	29·40	12·11	1·14	5·39	1·35	19·99	13·6
'64	29·57	12·68	1·24	6·09	1·40	21·41	14·5
'65	29·77	13·48	1·32	6·39	1·44	22·63	15·2
'66	30·08	13·94	1·41	6·43	1·50	23·28	15·5
'67	30·33	15·03	1·39	6·85	1·57	24·84	16·4
'68	30·62	14·81	1·47	6·37	1·59	24·24	15·8
'69	30·91	14·89	1·52	6·59	1·63	24·63	15·9
'70	31·21	15·16	1·48	6·54	1·66	24·84	15·9
'71	31·51	15·88	1·58	7·07	1·74	26·27	16·7
'72	31·84	16·80	1·65	6·77	1·77	26·99	17·0
'73	32·12	18·63	1·69	7·69	1·82	29·83	18·6
'74	32·43	19·97	1·79	8·03	1·84	31·63	19·5
'75	32·75	20·61	1·72	8·22	1·86	32·41	19·8
'76	33·09	21·30	1·75	8·16	1·83	33·04	20·0
'77	33·45	20·64	1·74	8·53	1·87	32·78	19·6
'78	33·80	20·68	1·63	8·25	1·89	32·45	19·2
'79	34·16	19·74	1·47	8·38	1·89	31·48	18·4
'80	34·47	18·31	1·39	7·36	1·88	28·94	16·8
'81	34·79	18·84	1·38	6·66	1·96	28·84	16·6
Total	—	393·85	38·14	172·63	38·94	643·56	410·6
Average	—	15·75	1·53	6·91	1·56	25·75	16·4

Table III shows the quantities of grain and other materials converted into beer and spirits during the same series of years, the quantity of grain being calculated from the malt used. It is taken from a paper of my own "On the Increasing Dependence of this "Country on the Foreign Supplies of Food,"* with the recent years worked out from similar data. It is probable that the estimates are rather too high, but the progress of successive years may be depended upon; and again, as it should be, 1876 appears as that of

* "Trade, Population, and Food," pp. 76—102. G. Bell and Sons.

greatest quantity, though in value below 1875, owing to the fluctuations in price.

Table III.—*Quantities and Value of Grain Converted into Beer and Spirits, also of Sugar and Molasses.*

[In millions to two decimals.]

Years.	Grain.	Value.	Sugar and Molasses.	Value.
	Cwts.	£	Cwts.	£
1857	25·60	10·88	0·03	0·05
'58	24·40	9·13	0·06	0·06
'59	25·90	9·20	0·08	0·07
'60	23·60	10·02	0·11	0·12
'61	24·35	9·91	0·34	0·24
'62	23·62	7.36	0·51	0·30
'63	25·76	9·05	0·31	0·19
'64	28·61	9·55	0·05	0·05
'65	28·46	9·50	0·08	0·07
'66	29·34	11·25	0·22	0·18
'67	26·77	12·19	0·47	0·45
'68	27·88	13·43	0·47	0·44
'69	30·07	11·55	0·46	0·47
'70	32·11	12·32	0·34	0·31
'71	30·11	11·74	0·41	0·42
'72	33·81	12·84	0·56	0·53
'73	35·31	13·77	0·84	0·84
'74	35·03	15·41	1·04	1·06
'75	35·41	14·87	1·01	1·04
'76	37·43	13·10	1·08	1·01
'77	36·10	13·00	1·11	1·22
'78	35·78	11·81	1·37	1·29
'79	31·33	10·03	1·34	1·17
'80	34·94	11·53	1·62	1·58
'81	34·10	11·60	1·35	1·31
	755·82	285·04	15·26	14·47
Averages	30·23	11·40	0·61	0·58

Table IV is designed to show the average quantity of proof spirit consumed by each individual of whatever age or sex. If both males and females below the age of 18 are excluded, and only half the females counted—on the presumption that at least twice as much is drunk by a man as by a woman—the gallons will require to be multiplied by 2·33 to give the quantity allotted to each one old enough to be a consumer. Thus the 4·89 gallons of 1876 will become 11½ gallons for each adult male, and so in proportion in other years. The relative numbers of the sexes are taken to be in the ratio ascertained by the census of 1871; the rise and declension may thus be traced: 1876 being that in which the greatest average quantity seems to have been imbibed.

TABLE IV.—*Average Quantity per Head of Proof Spirit contained in the Various Alcoholic Liquors Consumed in each Year, from* 1857 *to* 1881.

[In single gallons to two decimals.]

1857	3·33	1867	4·07	1877	4·74
'58	3·45	'68	3·91	'78	4·72
'59	3·39	'69	3·89	'79	4·34
'60	3·59	'70	3·96	'80	4·33
'61	3·35	'71	4·13	'81	3·98
'62	3·39	'72	4·36		
'63	3·35	'73	4·62		
'64	3·42	'74	4·74	Total	100·45
'65	3·71	'75	4·78		
'66	4·01	'76	4·89	Average.....	4·02

All these tables have been grouped together as historical in their character. The particulars they contain may be subsequently referred to, although the further remarks will be principally based upon the information respecting last year. They all, as in the case of subsequent figures where not stated in full, are shown in millions to two places of decimals, that system of notation having many advantages in clearness of description and facility in reading, wherever the numbers are so large as that we may dispense with the figure below thousands, which would form the third decimal place where the whole number represents millions.

III.—*Cost of Alcohol Consumed.*

In estimating the cost of the alcohol consumed by the people of the United Kingdom, it is not my intention to dwell so much upon the actual money expended upon its production, as upon the proportion of the producing power of the nation which is so employed. To express this in its monetary value even if possible, must fail to give any real idea of the actual cost, unless brought into comparison with the income or resources we possess, and so to show the portion thus absorbed. Values, however, may be useful in some stages of the process, as a means of bringing the several items together. The census of 1881, although completed so far as the actual numbering is concerned, is not yet so sufficiently advanced as to divide the people into their several classes and occupations. It is necessary, therefore, to fall back upon the details of that of 1871, and in so doing I shall avail myself of minute calculations made some few years back for a paper on "the Growth of Population "with Relation to the Means of Subsistence," read by myself in Section F of the British Association.* For reasons there set forth, the population was separated into two divisions—the one, in round

* The method adopted is fully explained in this paper, which will be found at pp. 112—32 of the volume before referred to, "Trade, Population, and Food."

numbers ten and a-half millions, being engaged in producing the various things necessary for consumption, or constituting the material wealth of the country; the other, numbering twenty-one millions, being consumers or possessors only of that which the former section has by its labour created. If we can ascertain with any approach to accuracy how many of the first class are occupied in the preparation and sale of alcoholic liquors, we shall gain a very good idea of the real cost at which they are procured.

(*a*) *In Materials Converted.*

The first stage in such an inquiry is into the materials of which these are composed, for notwithstanding recent vague assertions that an infinitesimal trace of alcoholic existence is to be found in water and other substances, all the alcohol of which we know anything as an article of consumption is manufactured either from farinaceous or saccharine produce. It is in every case formed from the destruction or breaking up of articles of vegetable growth, and their recombination by the art of the distiller or brewer into the various forms of intoxicating drinks of which we make use. With the exception of wine, and so much of the spirit sold as brandy as is distilled from the juice of the grape, all the substances employed other than sugar are indifferently of home or foreign growth; and so far as those of home manufacture are concerned, we may consider them to be either native or imported. The quantities are ascertained from the Excise returns, and the recorded values of the importations from abroad afford the best criterion of money value. Those of foreign manufacture, whether fully prepared for use or as adjuncts to further operations here, are included in the Customs returns, and there is little difficulty as to either their value or quantity. The disturbance following upon the change of duty from malt to beer, before alluded to, renders it doubtful how far the home figures for 1881 truly represent the present consumption. In the following table the figures for 1876 are placed side by side with last year's. It is somewhat uncertain whether the marked diminution actually betokens diminished consumption or accidental difference only, for it is impossible to ascertain whether the stocks in existence at the commencement and the end of the years were alike. When we see that there is a greater falling off in the value of the foreign than the British, it would seem that less has been drunk; but with this the failure of the grape crops in France may have much to do. The lesser quantity of malt and corn used in brewing, whilst that for distilling is nearly as much as before, would indicate the cause to be the change of duty. Either way, the difference is not so great as to affect the calculations

of which they are to be the basis, and the mean of the two years may be taken as correct.

Until the year 1847 no materials except malt and hops were permitted to be used in the brewing of beer for sale. Then sugar was allowed, and now there is no restriction upon the use of grain of any description. By excise regulations a bushel of malt or corn is to weigh 42 lbs., and 28 lbs. of sugar is deemed to be equivalent to a bushel of malt. Reducing these to cwts. we have—

1876.—Malt and corn.....	74·85 bushels	=	28·07 cwts.	
Sugar and molasses....	1·09 cwts.	=	1·63 „	of malt
			29·70 „	
1881.—Malt and corn.....	67·15 bushels	=	25·18 „	
Sugar and molasses....	1·41 cwts.	=	2·11 „	of malt
			27·29 „	

or taking the mean, 28½ million cwts., exactly one-half of the average importation of cereals other than wheat for each of the last ten years, or nearly one-fourth of those of home growth, as estimated by Mr. Caird at 122 million cwts.

The next table gives (A) the quantities and values of the grain and saccharine matters of which the beer and spirits we manufactured in the years 1876 and 1881 were composed. It also shows (B) the importations of spirits, wine, and beer from abroad during the same two years: the declared value for the whole—for thus only can they be expressed in one sum—being 8·80*l.* for 1876, and 7·40*l.* for 1881; or taking the mean, a little over 8 millions of money, to be added to 14·10*l.* and 13·08*l.*, the values for the two years respectively of the materials used in home manufacture.

TABLE V.—(A) *Materials Used in Brewing and Distilling in the United Kingdom in the Years ended 30th September,* 1876 *and* 1881.

[In millions to two decimals.]

	Quantities.		Values.	
	1876.	1881.	1876.	1881.
Brewing—			£	£
Malt and corn ..... bshls.	59·30	52·33	10·50	8·84
Sugar and molasses ..... cwts.	0·87	1·15	0·90	1·21
Distilling—				
Malt ..... bshls.	6·80	6·70	2·60	2·76
Grain ..... cwts.	8·75	8·12		
Sugar and molasses ..... „	0·22	0·26	0·10	0·27
Total grain	74·85	67·15	14·10	13·08
„ sugar and molasses	1·09	1·41		

(B) *Alcoholic Liquors. Duty Paid for Consumption in the United Kingdom in the Years ended 31st December,* 1876 *and* 1881.

[In millions to two decimals]

	Quantities.		Values.	
	1876.	1881.	1876.	1881.
Spirits—			£	£
Rum ..... galls.	5·04	4·59	0·52	1·41
Brandy ..... „	4·49	3·12	1·48	0·46
Other sorts ..... „	2·02	0·59	0·27	0·06
Wine ..... „	18·54	15·64	6·50	5·42
Beer ..... barrels	0·01	0·05	0·03	0·05
	—	—	8·80	7·40
Total values (A) and (B)	—	—	22·90	20·48

Bringing together the two sets of values, we have for 1876 22·90*l.*, and for 1881 20·48*l.* To these must be added for hops, yeast, and other minor articles of the quantities of which there is no record kept, at least 2 or 3 millions more; and thus it is certain that the cost of the materials for manufacture and the liquors imported cannot be stated at less than 25 million pounds per annum. Professor Leone Levi in the paper already mentioned, estimates the "original cost of home produce and imports of beer, "spirits, and wines together at 42,800,000*l.*" In this he includes the expense of manufacture, but not that of retailing, or "distri-"bution." What these may be we shall perhaps be able to see farther on; apparently the two estimates are not inconsistent with each other.

Now Mr. Caird calculates the whole value of home agricultural food produce consumed annually to be 230,237,500*l.*, but for reasons fully explained elsewhere, I would deduct 38 million pounds for the value of imported food for cattle, and manures, &c., for the ground. Again, he does not include a variety of articles such as wood, wool, flax, &c., used in the manufactures, which I had also previously reckoned at one-fourth of all that is raised at home by the industry of our agricultural labourers. Making these alterations the calculation will stand thus:—

	£
Home, food produce	230,000,000
Foreign contribution to this	38,000,000
	192,000,000
Add one-third for other growths	64,000,000
	256,000,000

To raise produce to this value, it appears from the census of 1871 that the population actually engaged in agriculture numbered

2,989,154. If then the value of the materials and imported liquor be according to the previous calculation 25 millions, say one-tenth of the full produce of the soil, we must in like manner divide the labourers employed upon the soil by ten, bringing out this result, that from 290,000 to 300,000 individuals must be devoting their time and strength to the cultivation of the grain which is ultimately converted into alcoholic drink, and of that which, though not so converted, being equivalent in value to the manufactured liquor imported from abroad, is appropriated to the payment of that which is thus brought into the country. The first item then of cost to the nation is the producing power of some 300,000 of its living producers.

(b) In Conversion and Distribution.

To ascertain the cost at which the various substances are converted into alcoholic liquors, and they, together with those imported from abroad, are placed within reach of the consumer, it is necessary to resort to that portion of the census report which distributes the population amongst the various occupations which are connected with this traffic. The following list furnishes the description and numbers of those so employed in England and Wales:—

TABLE VI.—*Number of Persons in England and Wales Occupied in the Production and Distribution of Alcoholic Liquors, according to Census of* 1871.

Ale and cider merchants	610
Beersellers	16,361
Brewers	25,831
Cellarmen	3,307
Coopers	19,330
Cordial manufacturers	68
Cork-cutters	2,144
Distillers	623
Hop merchants	604
Hotel keepers, innkeepers, publicans	77,049
,, servants	49,075
Maltsters	10,356
Spirit and wine merchants	10,969
Yeast makers	747
Wife of innkeeper, publican, beerseller	61,553
	278,627
Add 2 per cent. of 7,560,874	151,217
	429,844
Proportion for Scotland	64,487
,, Ireland	103,162
	597,493
Employed on material, &c.	298,915
	896,408
$2\frac{3}{4}$ per cent. of 7,315,000	201,117
Say 10 per cent. of the total numbers of producers, viz., $10\frac{1}{2}$ millions	1,097,525

Of the numbers included in the above table, there are several who are only rendering partial service in this way, such as publicans' wives, although only those are enumerated who are stated to be employed in assisting their husbands, &c. There are others excluded, a portion of whose time properly belongs to this work, *e.g.*, grocers and confectioners, whose numbers are 111,094 and 16,988. The exclusion of these, by whom a large sale of drink is carried on, will fully if not more than compensate for the inclusion of those referred to, and we may fairly conclude that the whole of the 278,627 does not represent more than the number of those whose entire labour is given to the making and serving alcoholic liquors.

Beyond these there is a large proportion of those engaged in other occupations, whose services are called into requisition for the same end. Public houses, breweries, and distilleries have to be built and maintained. The railway and cartage work in removing from place to place both the materials for manufacture and the manufactured material; the glass and metal trades, as well as the furniture dealer, find large employment in furnishing their respective supplies. A safe method of estimating to what extent this is done would seem to be in supposing that all the several branches of industrial occupation are called into requisition in proportion to the numbers of those actually employed in the trades as shown in the table. Now as these amount to 278,627, who may be deemed to be of adult age, and the whole of those who were of 18 years and upwards in 1871 was 13,354,191, of which 278,627 is 2·1 per cent., and the total of the industrial and commercial class together being 7,560,874, 2 per cent. of this number = 151,217, may be appropriated to the service of the makers and dealers in liquor, giving a total of 429,844 for this portion of the kingdom.

It unfortunately happens that the Scotch records differ in many particulars of construction from the English, so that precisely similar information cannot be gained from them. It seems strange that in so simple a work as numbering the people a uniform system could not have been agreed upon. To illustrate the difference that exists: the industrial class for England includes those only who labour in some constructive branch; mere sellers are placed with the domestic or those rendering personal service to their fellows. In the Scotch the order is altered; they thus appear in different categories. Again, the English numbers for each order include all who are returned as working in that particular line, whilst in the Scotch there is an entry in one sum for dependents upon two or three divisions. In consequence of this divergence, it has been thought best to calculate the numbers for both Scotland and Ireland in exact proportion to the total population of each division, which brings out

64,487 for the one and 103,162 for the other; these, added to those for England, swell the number to 597,493 as that which properly represents the total of workers in the manufacturing and dispensing processes. Adding to this 298,915 found before as those by whom the materials for manufacture were produced, with those also given in exchange for the purchases from abroad, we get 896,408 as the estimated portion of the population whose occupation it is to provide the liquor consumed in the land.

(*c*) *In Supporting Makers and Distributors.*

Still this does not complete the tale. Those whose attention is absorbed in producing these drinks, have to depend upon others to provide their food and necessaries to the number of 201,117 persons. This is arrived at by the computation that whereas there are $10\frac{1}{2}$ million producers altogether, of whose labour 70 per cent. viz., 7,315,000 is required to procure food and necessaries for the whole population of $31\frac{1}{2}$ millions, and the 896,408 is $2\frac{3}{4}$ per cent. of this quantity, so $2\frac{3}{4}$ per cent. of the 7,315,000, by whose labour the whole of the community is sustained, housed, and clothed, will be required to do these offices for workers in alcohol, thus swelling the total to 1,097,525, which is slightly beyond 10 per cent. of the full number of producers the kingdom contains. This calculation is singularly in accord with one made on a wholly different method by Dr. Leone Levi in a paper read before this Society in 1872, wherein he considers that 846.000 persons were thus occupied; but then he does not reckon with these either those who have to labour for that which pays for the imports, or those who provide for the maintenance of the alcoholic workers. Were these added his computation would exceed mine.

We are thus led up to the conclusion that one-tenth of the producing power of the country is labouring solely for the production of alcoholic beverages. The Jewish lawgiver ordained that one-tenth of the earth's produce should be given for religious uses. Our own forefathers set apart one-tenth of that which the soil brought forth for the church and the poor. In these modern days Christian England devotes one-tenth of her producing power—the hard labour of her toiling sons and daughters—to providing for the wants of the votaries of Bacchus. Such is the cost at which our consumption of alcohol is procured, and if we wish to represent this in a money form, we must take some one or other of the estimates which have been formed of the annual national earnings of the working classes. Dr. Leone Levi has assumed these to be 418 million pounds, one-tenth of which would be 42 millions—not far from the sum which he assigns as the cost of home production and foreign importation together, viz., 42,800,000*l.* Other authors

have stated different amounts—Mr. Dudley Baxter 813 million pounds, and Mr. Gladstone 1,000 million as the total income of the nation. From these various sources we may safely conclude that its cost cannot be more than 100 million pounds or less than 50 million. This is stating the matter from the total abstainers' point of view, who see in it an entire loss of national wealth. The present is not the time or place for discussing how far these views are sound, but the statement of the total cost, whether expressed in lives or money, will furnish each individual with the means of judging to what extent his own practice may be forwarding or retarding that which he judges best for the welfare of the nation.

IV.—*Revenue from Alcohol: Receipt and Disposal.*

Having thus endeavoured to ascertain what portion of the nation's strength is consumed in the production of alcohol, it may be convenient before inquiring what farther waste ensues upon the consumption of this same alcohol, to consider the matter in regard to the revenue derived from the taxes which have to be paid prior to its reaching the mouths of the consumers.

Table II already given sets forth the amounts raised in the several years from 1854 to the present time. For the reasons previously stated, there may be some doubt whether the 28,840,000*l.* shown for 1881 is the exact sum then contributed to the exigencies of the State by the consumers of these liquors, but it is quite near enough for our present purpose. It is often charged against our fiscal system, that there is something immoral in raising the revenue from such a source, and that the money so obtained is tainted with the vice of those who are its chief contributors. A moment's reflection will show that inasmuch as the effect of raising the cost of the liquor can have no effect whatever in increasing its use; there can be no moral defection in making those who will thus spend their means, pay heavily to the exchequer, which has to sustain so much of the cost entailed by the repression and punishment of the evils wrought by intoxication. So far as the imposition of the tax can have any influence at all upon drinking, it must be to lessen rather than increase it, and the higher the impost the more surely must it act in this direction: provided always that it does not lead to illicit distillation, and thus promote concealed instead of open consumption. There is, however, a somewhat widespread impression that the efforts of temperance reformers are adverse to the interests of the Exchequer, and that were these labours to be crowned with success, the Minister who is charged with providing the ways and means of meeting the national expenditure, would be puzzled from what source to raise the money which is now so easily procured through the agency of the brewer and distiller. This difficulty

would no doubt be real; but if, as would undoubtedly be the case, the coin intercepted in its passage to the national purse, would still remain in the possession of those by whom it was saved, it would be but a tax upon the ingenuity of the chancellor how to find fresh means of transferring it from the one to the other. This could not be an overwhelming task, when it is remembered that the money reserved from drink and spared from the losses occasioned by drink, would render the ratepayer better able to meet the demands coming upon him in some other shape. For every sovereign rescued from the excise or customs officer's grasp, there would be two or three available for contribution through other channels. But whilst the State cannot be acting immorally in taxing the drink itself, it may be decidedly in the wrong if it does anything to encourage drinking or neglects any means within its power of discouraging this vice. This consideration opens up the wide question of the proper control which ought to be exercised over the number and character of the places where drink may be procured, and the temptations thus offered to increasing the consumption by which the Exchequer is swelled. This subject is for statesmen and philanthropists to settle upon moral and religious grounds: but it may well help their judgment and action if the statistician can show that in truth the major portion, if not the whole, or more than the whole, of the taxes raised upon alcohol is expended in counteracting the evils which its consumption entails; and that in reality the public chest would be better filled if there were no alcohol on which to levy a duty.

The following items extracted from the civil service estimates for the current year, and the latest records of the sums raised by local taxation, show the sums voted for the maintenance of several branches of the public expenditure which are closely connected with the consumption of alcohol:—

	£
Customs service	993,155
Inland revenue	1,907,822
Law and justice	10,531,710
Pauperism	10,550,145
Lunacy	1,007,794
	24,990,626

Their total almost exactly coincides with the customs and excise collection, if we add to them a not unreasonable share of the army and navy votes, which include the cost of liquor supplied to our troops and ships; the loss of force from what amount of intoxication is indulged in by our soldiers and sailors; and the increase in the numbers necessarily maintained in support of the civil forces to protect the revenue, to preserve order and punish crime. Who

can doubt, for instance, that if the Irish people drank no whisky, the poverty and the consequent troubles now existing would speedily cease?

It is by no means intended to assert that the whole of the charges upon the State funds enumerated in this extract would cease if intemperance came to an end; nor is it easy to say what proportion of them is in all cases due to drinking. Of the Customs and Inland revenue it is not difficult to pick out the amounts which are spent in collecting the duties on spirits, wine, and beer. They are as near as may be one-half of the whole vote. We have the testimony of our judges, magistrates, and police officers, that some eight or nine-tenths of the crime and pauperism which exist are due to intemperance. Our medical men assign a large portion of the lunacy which comes upon adults, and of the idiots and imbeciles who are so born or become so in infancy owing to the depravity of the parent or the neglect of the nurse, to the effects of drink. It must then be deemed a very moderate estimate if we assign one-half of the cost of law and justice, of pauperism and lunacy, to the crime and the poverty which intemperance occasions. But this is not all: each criminal has his one or more victims whose life, health, property, or time he destroys or wastes. No one who has ever attended our criminal courts, but must be aware that the expense borne by the State in the apprehension, trial, and punishment of the wrongdoer is but a portion of the cost of his crime. Again, no one who knows anything of the private expenditure in meeting the poverty, sickness, and distress resulting from drink, either to the drinker himself or to those whom he injures, but must feel that it at least equals in amount that which the parish officer or other functionary distributes. Witness our hospitals, our asylums, and the alms entrusted to our clergy and other dispensers of charity in food, clothing, and medical aid. Now all this is just as much a loss to the nation as if it were raised by taxation and expended by the State. It is the product of voluntary rating, and thus a true contribution, in magnitude sufficient to meet all the other portion of the charges to which the table relates. It can scarcely be denied that thus an amount as great as the whole revenue derived from the taxation of alcohol is actually expended because that alcohol is consumed. The guardians of the public funds need feel no apprehensions at the decline of the revenue from the spread of temperance, being fully assured that for every penny thus lost to the Crown, there will be either an actual reduction in the charges which absorb that revenue, or on the pockets of those from whom it is obtained, which will enable them without loss to supply by other imposts that which the State requires for meeting the remaining charges. Time will not suffice to go into the minute details which

the rigid statistician may demand: but this is not the main issue set down for trial on this occasion, and I proceed to the second part of the investigation, viz., the waste of the nation's strength, the expenditure of its power resulting from the consumption of alcohol.

V.—*Expenditure Resulting from Consumption.*

Coming to the consideration of this part of the subject, it must be confessed that the data on which to found thoroughly accurate conclusions are not yet within our reach. It has not been long enough deemed worthy of inquiry, nor have researches been deep enough to procure a sufficient body of statistics. They are only now being made; but such as are obtainable are worthy of attention, if it were only to define the nature of the information required and to direct investigation into the proper channels. Neither have I had time to gather together all that is to be procured, nor would there be space in this paper to fully discuss all that I have. The details of the recently taken census will supply some of the requisite evidence, and when these are fully published the whole question may again be taken up. In the meantime we are not without sufficient facts to guide us very near to what must be the truth, and to show that it must be worth ascertaining.

No one doubts that the undue indulgence in the use of spirituous liquors is the source of much crime and pauperism, sickness and death, destruction of property and waste of time and substance, nor that these affect not only the welfare of those who are in fault, but those who are connected with them or exposed to their influence, and thus most seriously trench upon the economic wellbeing of the whole community. To how great an extent this may prevail must at present be very much a matter of opinion, yet from the concurrent testimony of many competent observers, it is quite possible to arrive at a tolerably correct estimate of the various ways in which the nation's strength is thus wasted.

Dr. Norman Kerr has devoted much time and thought to the discovery of how many premature deaths may be assigned to this cause. The grounds on which he has proceeded, with the results of his calculations, have been brought before many medical and other assemblies without drawing forth adverse statements or opinions.* The direct mortality from personal drunkenness he puts at 40,500, although his belief is that the true mortality for the United Kingdom is more likely to be between fifty and sixty thousand. Then as to the indirect mortality, from accident, disease, violence, and starvation, through the intemperance of other than the killed; it seems to him that for every personal drunkard that dies, two

* "The Mortality from Intemperance," June, 1879.

innocents die also. Of these he assigns some 65,000 to infantile deaths, the remainder to adults. These estimates were for the year 1876, in which the recorded deaths were 676,761. It gives an excess of deaths over those which would occur were it not for alcohol, amounting to between one-fifth or sixth of the whole number, or if we except the infants, to one-tenth.

But sickness precedes death, and prevails at all periods of life. Dr. Andrew Clark asserts that of the patients coming under his observation in hospital practice, 70 per cent. owe their presence there to the use of alcohol, and he ascribes very nearly a like proportion of the disease amongst his fashionable patients to the same cause. In a paper by myself, on "The Finance of National "Insurance," which will be found in the Journal of the Social Science Association for 1880,* a table of sickness at each age, as derived from the experience of friendly societies and other sources, is given. From this it would appear that the sickness of those at the working ages 18 to 65 averages about ten days per annum—say 3 per cent. of the working days—and this agrees well with that which has come under my own notice in one branch of the public service. These of course exclude the bulk of those who are the victims of intemperance; but applying it to the $10\frac{1}{2}$ millions of producers, it would show that sickness is equivalent to a reduction of numbers to the extent of 315,000. Now if we say that only one-half as much as this is occasioned by the consumption of alcohol, we shall have at the very lowest computation 150,000 of our producing class at one time incapacitated for labour from this cause. Surely a very moderate reckoning, when it is borne in mind that 600,000 inebriates—only four for each place for the sale of liquor—are supposed to exist in the kingdom. These must be mainly amongst those who ought to be producing by their labour. They are calculated to die at the rate of $5\frac{2}{3}$ per cent. per annum, and their unfitness for work must go a long way to making up the above allowance. Excluding those who are returned as belonging to the "indefinite or non-productive," class, numbering $13\frac{1}{3}$ millions, there are found to be a little over 18 millions on whose health and vigour the maintenance of all depend. Of these, $10\frac{1}{2}$ millions are, as we have seen, deemed to be producers, but the labours of the other $7\frac{1}{2}$ millions are no less necessary in ministering to the wants of those actually engaged in producing and administering that which is produced. Amongst these, consisting largely of wives and women engaged in household duties, there is, unhappily, too much drinking, and also a large number whose health is impaired by the want of sustenance and comfort occasioned by their dependence on

* "Trade, Population, and Food," pp. 326—44.

the men who do drink. In like manner the infants whose lives are sacrificed to the maladies inherited from drinking parents, or resulting from deficient nutrition and attention, absorb the time and strength of those to whose care or neglect they are committed. Thus the infants themselves, although in no sense adding to the nation's strength, actually detract from it in the persons of others, and putting this together with the loss of power both before and after their birth—incident to the maternal functions and the breakdown of health arising from the circumstances in which the mothers are thrown at the season of weakness—it is not too much to say that fully an equal allowance of sickness must be made for these two classes as for that of the producers. As nearly as possible one-fifth of the existing population are not more than 7 years old, this would give $5\frac{1}{3}$ millions. Adding these to the $7\frac{1}{2}$ millions of workers, though not producers, we get nearly 13 millions, for whom an allowance in the same proportion would give 185,000 as at one time incapacitated from working by their own sickness or that of the infants whom they have to attend to—in both cases as the result of intemperance. In all this there has been no estimate of that enfeebled health which, in the experience of all, lessens the power for labour, whether in productive occupations or in those of a ministerial nature, to a far greater extent than do the days of enforced abstinence by illness.

Since writing the foregoing, I have met with a passage in a report to the registrar-general in 1875, by Dr. Farr, which completely supports the computation made in respect to the proportion of sickness to death:—"It has been found by experience that in "England, to one annual death in a body of men, two are on an "average constantly suffering from sickness of some severity. "There are two years of severe sickness on an average to one "death. In the police and in some friendly societies the con-"stantly sick to one annual death are 2·8; in the army at home 4·2." On this reckoning 120,000 deaths multiplied by 2·8 would give 336,000. My calculation is 335,000. Dr. Farr goes on to say that since the deaths for the year of which he wrote were 700,000, there must be 1,400,000 constantly suffering from severe disease, and 2 millions from such sickness as would bring them within the range of Friendly society relief. The proportion of these whose sickness Dr. Andrew Clark would attribute to intemperance, far exceeds the numbers above given.

There is an overwhelming amount of testimony from the clergy, guardians of the poor, and the visitors and agents of philanthropic societies, to the fact that pauperism is due more to drinking than any other cause—not always that of the paupers themselves, but of those on whom they are dependent. Seventy-five per cent. of

those who are thus supported at the public expense admittedly owe their position to this cause. Nearly if not quite the same may be said of lunatics, idiots, and imbeciles, and those who have lost the power of sight, speech, and hearing, and are thus prevented from fully or at all contributing to their own support. The census of 1871 shows the following numbers in England and Wales :—

Inmates of workhouses	148,291
,, hospitals	19,585
Lunatics	39,567
Idiots and imbeciles	29,452
Blind	21,590
Deaf and dumb	11,518
	270,003

Possibly some of these are reckoned twice over, but we cannot greatly err if we assign one-half the number to the prevalence of intemperance, and adding in proportion to the population, which in Scotland and Ireland together was 40 per cent. of that of England, we shall have 135,000 + 54,000 = 189,000. This number may be increased by 11,000, the one-half of the union and parochial officers, chaplains, and others attached to or visiting these institutions, bringing up the total to 200,000, without at all calculating the numbers who, as the distributors of private charities, have their time devoted to the same objects.

Of the criminal classes, we have the decided expression of Chief Justice Coleridge, backed by the authority of numberless justices of the peace, chaplains of gaols, and prison officers, that eight-tenths of the crime brought to judicial notice is the offspring of drink. This entails the employment of police, prison attendants, &c., besides that of judges, magistrates, and officers of the law courts, who are thus numbered in 1871 :—

Inmates of prisons	28,756
Prison officers	3,750
Police	28,330
Law officers	2,336
	63,172
Forty per cent. for Scotland and Ireland	25,268
	88,440

Now when it is recollected that much criminal misconduct escapes punishment, that every act of crime destroys life, health, or property, and involves loss of time, which might be devoted to useful labour, in its detection, conviction, and punishment (often in the shape of fines), in addition to that of the actual sufferers; it is

safe to assume that but for the effects of the drink which occasions so large a share of these offences, the nation would be saved a loss fully equal to the whole of the numbers thus stated.

There is yet one more consequent loss in the services of professional and other persons, who might be spared were it not for the occurrence of sickness and death, poverty and crime. The same census return enumerates :—

Physicians and other branches of the profession	20,264
Druggists and surgical instrument makers	20,918
Professional nurses, sisters, &c.	30,892
Undertakers	1,582
Pawnbrokers	7,591
	81,247
Forty per cent.	32,498
	113,745

Surely 50,000 of these is not too many to include in the computation.

Further than this the Civil Service Estimates for the present year fix the Customs establishment at (including a calculated portion of the fluctuating employés) 6,583 persons, and that of the Inland Revenue at 5,948, together 12,531, of whom for the same reason as one-half the cost of these departments was assumed to be chargeable to the collection of the imposts upon alcohol, we may set down 6,000 persons as thus employed.

Finally, the army and navy have oftentimes to support the civil power, and the seamen of the merchant navy are engaged in the transport of alcoholic liquors. Their numbers in 1871 were :—

Army, total at home and abroad	193,607
Navy „	41,790
Marines „	13,785
	249,182
Merchant seamen „	175,728
	424,910

These are all subject to the same temptations to indulgence in drink, and the same vicissitudes as to health and employment of time as others are, and did they not yield or succumb to these, their efficiency might be increased, or their numbers be diminished most certainly by 10 per cent. At least another 10 per cent. may be charged for their occupation in various ways, in consequence of the drinking of others. This would give say 85,000.

All these estimates are confessedly more or less arbitrary, yet

they are consonant with reason, and will to those who have examined carefully into the cause and effects of the national use of alcohol, appear to err on the side of moderation rather than exaggeration. This will especially seem to be the case when it is remembered that no effort has been made to include the loss of time and exhaustion of strength in the fetching, carrying and consuming of the liquor by those who partake of it, nor yet of the consequences short of crime, &c., which flow from the state of intoxication, or of that approach to it which lessens self-control and inclines to evil, especially that severe form of it to which the streets of our towns bear nightly witness. Yet all these, as in fact does every form of moral delinquency or perversion, have an important bearing upon the economic condition and prosperity of the whole community. It will be observed that all the calculations as to waste of power are of the assumed loss from what all will admit to be the undue use of the alcohol. Against these, in the opinion of many, there will be a set off in the good effects which are believed to arise from its moderate use and enjoyment. Abstainers will not admit that these can be more than infinitesimal in amount, but conceding for argument sake, that they may be appreciable or even largely beneficial, they certainly cannot outweigh the unappraised evils to which allusion has been made. The preponderance of harm and loss must certainly be found on the side of use rather than of abstinence.

To sum up the several items of expenditure, not in money but in numbers, we have an annual sacrifice of—

By deaths, adult and infantile	120,000
,, sickness of producers	150,000
,, administrators	185,000
,, pauperism	200,000
,, crime	88,000
,, professional and other service	50,000
,, revenue officials	6,000
,, army, navy, and merchant service	85,000
	884,000

Add these to the 1,097,525 previously shown to be engaged in the production of alcohol, and we have very little short of two millions of our adult population employing or wasting their lives in this one direction. One-tenth of the vital power which maintains our population and accumulates our wealth, engaged in manufacturing that which in its use employs and destroys that same vitality in one-twentieth of the people who are of sufficient age to become consumers. Ten per cent. of all our adults rendered economically helpless and useless by reason of our national taste for drink.

VI.—*Loss of Capital and Power.*

No reference has been made to the devotion of capital and skill, with the appropriation of both of which to such a purpose the economical use of the national resources is concerned, for the reason that supposing, as we must, that these are employed in the same proportion as the persons are, the numbers will furnish an indication of the national expenditure in this as it does in vital power. Startling as the conclusions arrived at are, there seems to me no reason to doubt their accuracy, and if not, it is evident how seriously they must affect our views as to the effect they have upon our present social condition, and the prospects to be entertained of our future economic progress. The devotion of so large a number of our people to this one branch of manufacture assumes a more serious import from the fact that of the $10\frac{1}{2}$ millions of producers 65 or 70 per cent. are wholly employed in providing the food, drink, and necessaries of life for themselves and their fellow countrymen. It is the remainder only, that is, some $3\frac{1}{2}$ millions, who are applicable to the production of luxuries or the accumulation of wealth. If there were no alcohol to be produced or consumed there might be 2 millions more, an addition of 60 per cent. to our power of procuring articles other than for daily use or for adding to our existing stores. How much of increased happiness might result, or how much more might be laid by? If it be said that with an ever increasing people there might be a difficulty in finding employment, the answer is that they might as well be resting as working for that which is useless; or that elsewhere, if not in this country, there is abundant scope for employing more labour, more skill, and more capital, than we have to spare at home. Our export trade might be cheapened if the workers employed in it saved the percentage now spent in drink, and our colonial possessions peopled, mutually to their advantage and ours.

VII.—*Conclusion.*

In conclusion, it may be asked whether this is not truly the question of the day, one that demands the efforts of our legislators in lessening the temptations to indulgence by restricting and controlling the houses in which intoxicants are sold; one that calls upon our social reformers and philanthropists for renewed and persevering exertions to check the spread of intemperance and reclaim its victims; one that justifies—if it does not demand that all should follow their example—the self-denial of those who, that their influence over others may be increased, altogether abandon the use of alcohol themselves, and will never rest from their labours until the country is purged from its national sin. We occupy ourselves much

in discussing the topics of imports, exports, the balance of trade, and the relative advantages of fair and free trade, forgetful that in our midst there lurks an evil whose removal would set at rest all these difficult and disturbing questions, and give us such a new lease of prosperity as to quench all desire for a change in our fiscal system. We deplore our losses from deficient harvests as well as from diminished trade, whilst the cancer which is eating into our vitals consumes in one year more than we lose in two from combined agricultural and commercial depression. If agriculture is to prosper, trade to flourish, or social, moral, and religious progress to be made, we must speedily reform our drinking customs, and arrest the growth of national expenditure upon alcohol.

Discussion *on* Mr. Bourne's Paper.

Professor Leone Levi said they were greatly indebted to Mr. Bourne for his very able, temperate, and judicious paper on a subject of great importance, on which it was very easy to enter into sentiment, but upon which also statistics might give a great deal of light. It was a relief to learn that the amount expended by the nation in the production of alcoholic liquor did not amount to so large a sum as had been put forward again and again in the "Times," amounting to 123 million pounds; that representing to a large extent the gains of the distributors, the taxation imposed upon alcoholic liquors, and the expense of distribution. From calculations which he had made, contained in a "Report on the Appropriation of Wages and other Income," presented to the British Association in 1881, he found that the gross amount expended by the nation in these articles was 32 or 33 million pounds, and taking the real cost of distribution at 10 per cent., it came altogether to 36 million pounds, or about one-third of the total amount said to be expended by individuals on these liquors. But then the very important question arose, what proportion this amount constitutes on the total annual expenditure of the people? The total expenditure was by him estimated at 684 million pounds a year net and 878 million pounds gross. Upon the total gross expenditure, therefore, the gross expenditure upon alcoholic liquors, including taxes and the profits of distribution, was about 13 per cent., but upon the net expenditure the proportion was about 6 per cent. only; so that the proportion devoted to this item was not so very large as one might imagine. Mr. Bourne had assumed that the total expenditure thus incurred was the cause of all the mischiefs which he had subsequently enumerated. The fact of the matter was that a very large proportion of the consumption of these alcoholic liquors might be termed temperate, while a very small proportion represented the intemperate. But most, if not all, the consequences referred to as to lunatics, prisons, and pauperism arose not from the total expenditure, but from the portion of that expenditure which was really consumed in excess and by those who were intemperate. It was very difficult to ascertain the proportion of the temperate expenditure to the intemperate. When Mr. Hoyle read the paper referred to at York, he ventured off hand to make a statement to this effect: there were say 280,000 persons taken up for intemperance in the United Kingdom; assume these to represent 280,000 different individuals, which they did not, because the same persons were taken up time after time; multiply these by five, that is on the supposition that every intemperate case taken up by the police represents five persons given to intemperance; that would represent about $1\frac{1}{2}$ million persons, or say one twenty-fourth part of the population. A twenty-fourth part of 36 million pounds would be

1,500,000*l.*, that would be the real cost of the intemperate expenditure in the country. In all branches of expenditure a clear distinction must be made between the necessary, the luxurious, and the really wasteful. Of course there was a very large abuse of drink in various ways—in a luxurious manner at public dinners and in society generally, but that could scarcely be considered in an economic sense as absolutely wasted, or as the direct cause of those mischievous consequences that had been referred to. Then again, when they came to the mischievous consequences, the difficulty was to ascertain the immediate as distinguished from the remote consequences of drink. For instance, Mr. Bourne stated that a very large proportion of lunatics became so in consequence of intemperance; but the commissioners of lunacy stated that the proportion of those who became lunatics or idiots from drink was last year only 12·6 per cent. Then again with regard to crime, he found that of the number taken up by the police in England for summary jurisdiction offences, those taken up for intemperance amounted to 26 per cent., a very large proportion, but not one-half. Then coming to the higher crimes in England, by far the largest proportion were crimes against property, and not against the person. The direct consequence of drunkenness was to incite to crimes against the person, though indirectly by producing want and misery it might lead eventually to crimes against property; but still the proportion of offences in England was 15 per cent. against the person to 85 per cent. against property, and those which on the widest possible hypothesis could be ascribed to drink did not amount to anything like what might be deduced from the author's statement. In 1880 there were fifteen cases in which the capital sentence was carried out; of these, four arose from jealousy, four from dissensions in families, two from cupidity, one from debauchery, one from revenge, and one from homicidal mania. Similarly in the fifteen cases where the penalty was commuted, eight arose from robbery, two from dissensions, two from drink, two from debauchery, and one from desertion. To what extent any of these might in a more distant or remote manner have been the result of drunkenness of course it was impossible to say, but these figures would give an idea of the causes of crime. Then again in the matter of pauperism, doubtless a very large proportion arose from drunkenness, but he believed that a very large proportion of the pauperism of the country was hereditary; a large proportion also arose from sickness in the family and from want of work, due to circumstances of trade. Another important cause was the want of thrift. Of course if the people were more thrifty, and if the means for saving were multiplied there would be less drunkenness; but to say that the whole or any large proportion of the pauperism arose directly from drunkenness was rather beyond the mark. Then as regards the mortality arising from drunkenness: the registrar-general's report told us that in 1880 the deaths from alcoholism, viz., delirium tremens and intemperance, or deaths directly ascribed to drink, numbered 950, whilst 152 violent deaths were returned as having occurred while the parties were in a state of intoxication, or suffering from delirium tremens, altogether 1,102 upon a total of

upwards of 500,000 deaths. He was very sorry to offer any remark which seemed to diminish the importance of the facts brought before them. It was impossible to flatter themselves that the evil did not exist; it did exist, and it was their bounden duty to do their utmost to diminish it; at the same time it was important to find out the truth of the matter, because friends were never gained to a cause by bringing forward exaggerated facts which could not be supported by careful investigation.

Mr. Hepple Hall said Mr. Bourne had given them a most suggestive paper. There were two statements in it to which he wished to draw attention from a statistical point of view. At the foot of Section B the author spoke of 896,408 as the estimated number of the people whose occupation it is to provide the liquor consumed in the land. These figures are further increased to 1,097,525 by the proportion of the whole population required to sustain, house, and clothe the workers in alcohol. He thus arrived at the conclusion that one-tenth of the producing power of the country was labouring solely for the production of alcoholic beverages. The care with which Mr. Bourne invariably considered his figures, made him (Mr. Hall) hesitate before challenging any of them, but surely he had not taken into consideration the fact that the labour employed in the supply of alcohol would, if it had not that means of employment, either go to swell the large and growing class of the unemployed or would become fit subjects for emigration. No suitable channel of employment was open to them in this country. The other passage was one in which Mr. Bourne gave items extracted from the Civil Service estimates of the current year, and showed sums amounting to nearly 25 million pounds as coinciding with the Customs and Excise collection. Here again he would suggest that Mr. Bourne had perhaps laid himself open to some slight charge of inaccuracy. In another part of his paper he attributed all the ills of the Irish race to the habit of drinking whisky. He (Mr. Hall) would respectfully submit, with all his horror of whisky, and especially of Irish whisky, that in this matter Mr. Bourne charged Pat with a crime he was scarcely guilty of. The troubles existing in Ireland had a far deeper root, and a very different source than the whisky. Looking at the whole subject, he was inclined to agree with Professor Levi that they must exercise a just and fair discrimination in dealing with these great questions, in order to form a right conclusion with regard to them.

Rev. Dawson Burns said he believed that the estimate of 130 million pounds as being the average annual expenditure upon intoxicating drink for the last ten years was by no means an exaggeration, and in dealing with this question, if they diverged from the point of simple expenditure into the question of the relation of that expenditure to the economical state of the nation, it was a fair subject for consideration how far the appropriation of that enormous sum of money in the purchase of other things than alcohol would affect the condition of the country. That seemed to be the vital

essence of the whole question. They did appropriate 130 million pounds annually to alcohol; supposing that were not so appropriated but were otherwise used, what would be the effect upon the industrial, moral, social, and economical condition of the country? Both Mr. Bright and Lord Derby, in speaking on this topic, had expressed the opinion that if only one-half the drinking were given up, the condition of England would be so much altered for the better, that it would scarcely be recognised as the same country, and, knowing as some of them did, the effect upon families when they changed in this matter, he could say deliberately that it was impossible to exaggerate the improvement that would take place, if even a large proportion of that expenditure were otherwise directed, and how much more so if the whole were otherwise used. With regard to the criticism of Professor Levi and Mr. Hall, he might say that on the question of the loss produced to the country, they must take the opinion formed by the experience of those who were brought into immediate connection with the people. The judges had no interest in exaggerating, neither had those in charge of prisoners any motive for misrepresenting the proportion of crime that was owing to strong drink. There was no undue disposition on the part of guardians of the poor to say that 75 per cent., instead of 20 or 30 per cent., was the proportion of those who were brought under their care through intoxicating liquor. Professor Levi had deplored the want of thrift, but was not this largely due to that other cause of intemperance lying behind it; and as to the wasteful expenditure upon drink, admitting that there was a distinction between what was termed the temperate and the intemperate use, who would pretend to say that the intemperate expenditure, interpreted in the most liberal sense of that term, did not enormously exceed that proportion which Professor Levi had laid down? If the Professor was compelled to visit every public house in London that night, and to estimate what was the intemperate expenditure upon alcohol in all those houses, and if it were possible for him to extend his visits to the whole country, no doubt he would very much alter his conclusions. Who could pretend to say that the drinking going on in London that night was temperate? If gentlemen would examine into the condition of the working classes, and see what an enormous amount of their money was wasted on strong drink, they would find that the calculations made by Mr. Bourne were very much within the mark. Besides, he had made no allowance for what was an enormous loss to the country, namely, the want of punctuality in work caused by drink. He knew a gentleman connected with employment of labour, giving work to more than 60,000 men in various parts of the country, and he stated that their loss from this one cause was enormous with the men who took to drinking or did not come to work on account of previous drinking. That great item of economic loss did not enter into the account which had been laid before them that night. He believed the representations made by the reader of the paper were most reasonable, and a more thorough investigation of the whole facts would show that the statements made were under the actual facts rather than beyond them.

Rev. Canon ELLISON said if he understood Professor Leone Levi aright, he thought the proportion of temperate drinking to intemperate was very much larger than was generally allowed, and he gave some figures in illustration. He (Canon Ellison) approached the subject from a somewhat different point of view. He had been for more than forty years a parochial clergyman, for twenty years in a large town, and his experience showed that taking the ordinary statistics of crime which came before the public eye, and comparing them with what he had seen going on in the homes of the people, so far from Mr. Bourne's figures being at all in excess of the truth, they fell very far short of it. He believed the real truth was that the amount of intemperate drinking was very far in excess of what the public at large had the least idea of, and he might illustrate this by one or two figures. In the House of Lords' inquiry, Mr. Wayland, a missionary to public houses in the east of London, was asked what he thought would be the proportion of drunken people to the drunken people who were taken up by the police, the instructions to the police being that they are never to touch drunken people unless they are either noisily or obstructively drunk. His reply was that the proportion would be 50 to 1. That evidence was rather borne out by Mr. Chamberlain, who gave some very alarming figures. He said a certain number of public houses in Birmingham were watched on a Saturday night, and the number of people given who came out of those public houses, and then the number of those who were drunk. Taking these as fair specimens of the whole of the public houses in Birmingham, it was calculated that there were 40,000 drunken people in the streets on a Saturday night. The members of the committee were so startled with this, that they asked Mr. Chamberlain to consider the different conditions which might be taken as qualifying a statement of that kind, and he therefore threw out certain figures which might have seemed to come in unduly to enlarge the estimate, and at last he said, "I should think on the whole probably there would be about 5,000 drunken persons in the streets of Birmingham that night." On that night there were only twenty-three taken up by the police, giving a much larger estimate than Professor Levi took when he said that for one intemperate person taken up by the police you might reckon that there were five others intemperate who were not so dealt with. He was afraid the number would be found much larger than that. Then again, when they spoke of the indirect as compared with the direct results, he believed that the indirect results were far more important than the direct. He referred to the numbers that he had seen who had been sent to lunatic asylums, or children made idiots, or those who had suffered in one way or another whose cases never would appear in figures. A few years ago in the report of the Durham Lunatic Asylum, the superintendent said that of the women who were there the greater number had become inmates through the cruelty of drunken husbands. He did not believe that those who were accustomed to judge of these things merely in relation to percentages, or to the number of those who came under the notice of the authorities, had the remotest idea of the real amount of intemperate drinking in the

country, and he was very thankful to have heard certain conclusions brought out as they had been by Mr. Bourne.

Mr. D. MacIver, M.P., said he entirely concurred in Professor Leone Levi's opinion, that but a comparatively small proportion of the drinking in the country was intemperate drinking; still on the other hand he could not help thinking that there was a good deal of absolutely wasteful drinking, which although it might not result in actual drunkenness and crime, was yet on the side of evil, and not on the side of health. His experience as a magistrate showed that the same people were taken up for drunkenness again and again year after year, until they became almost old acquaintances, and that rather led to the conclusion that the percentage of the population which was intemperate was smaller than Mr. Bourne had indicated. Although he was entirely in harmony with the intentions of the author, and although every one must have met with many cases in which the evils and miseries produced by drunkenness could not possibly be exaggerated, yet he thought that the paper contained in many points language of exaggeration, and however good the intentions might be, that, after all, was not the way to further the cause of temperance. For instance, with regard to the Irish and their whisky, he did not think such a statement as that made by the author was tenable for a moment. Then with reference to the national revenue, it must be remembered that most of the charges on the revenue were fixed charges—such, for instance, as the interest on the national debt—and could not possibly be diminished, even if the drink traffic, with its attendant evils, were entirely to disappear.

Mr. Giffen said there could be no question that Mr. Bourne had thrown a great deal of light upon this subject. One point which seemed to come out with a good deal of clearness was this, that Mr. Bourne's investigations confirmed the estimate made by Mr. Hoyle, that the amount paid for the production and distribution of alcohol annually was from 120 million to 130 million pounds. The actual cost of the production of the raw materials used was stated at 22 million pounds; the people engaged in producing the raw material were only one-third of the total number concerned in the manufacture and distribution of the article, so that multiplying the 22 million pounds by 3 they came to a figure of between 60 million and 70 million pounds; then adding 30 million pounds for taxation, they came to a figure of over 100 million pounds; and that calculation corroborated to a very considerable extent the sum of from 120 million to 130 million pounds, at which Mr. Hoyle and others had arrived. They must not expect to get extreme accuracy in these matters, but when independent investigators, working by different ways, arrived at such very large figures, they might be quite safe in assuming that the lowest of them was within the mark. Going beyond this point, there could be no doubt that the question of the loss to the country by the consumption of alcohol was an entirely different problem, and in its consideration the question suggested by Professor Levi, as to what was temperate and

intemperate, came into view. It was quite open to those who maintained that every kind of consumption of alcohol was waste, to argue as Mr. Bourne had argued, that one-tenth of the power of the country was really engaged in this business, and if they assumed that the thing was an absolutely noxious article, the conclusions of the paper were established. But looking at the matter in a strictly economic aspect, he did not think the state of the evidence on the subject was such as to justify them in assuming, for purposes of economic discussion, that a large part of the consumption of alcoholic liquors was any more wasteful or injurious to the community than the expenditure for hundreds of other articles. If, however, with regard to any article they could say definitely that a certain part of the use of it was absolutely injurious to the people at the time they were consuming it, and that it produced a certain loss of time, and disease and sickness resulted from its use, then there was an economic waste arising from the consumption of alcoholic liquors, which could be spoken of apart from any theories of total abstinence or the reverse, and this waste, which everybody must recognise, whether total abstainers or not, must be very large indeed. Professor Levi had very properly drawn attention to some calculations which might be made upon the statistics of crime and pauperism, in contradiction to estimates which were made by those intimately acquainted with the condition of the people; but looking at the balance of evidence, he (Mr. Giffen) thought the very small percentage which the Professor arrived at was hardly supported, and they could not but come to the conclusion that of the 100 million pounds, which must be admitted to be spent by the people on alcoholic liquors, a very large part was wasteful expenditure. Even if it were one-fourth only, or 25 million pounds, that was an enormous sum, and that was entirely irrespective of the waste to the country from crime and pauperism, which on Mr. Bourne's figures would not be less than another 25 million pounds. These two sums amounted to 50 million pounds, which was quite large enough to justify, in an economic view, all the complaints about the evils of intemperance, and the opinion that there would be an immense gain to the country if the evil could be removed. The consideration of what could be obtained with such a sum as 50 million pounds annually, quite justified the expressions of Lord Derby and others as to what the effect would be if they were a temperate people.

Mr. Bourne, in reply, said the observations of Professor Levi were directed, in the first place, to the fact that the intemperate use of liquor was small in comparison with the temperate. He (Mr. Bourne) did not much care to inquire whether it was small or large, if the results which he had depicted flowed from its use. It did not matter if only a tenth portion was so consumed if the amount of evil produced remained the same, and Professor Levi had not at all shaken the estimate he had made as to the results of the intemperate use. That pauperism was hereditary only bore out his argument, because it arose from the fact of the fathers having been drunkards, entailing poverty upon their descendants and disability to labour by the very fact of their indulgence in liquor

beforehand. The Professor's remarks had been entirely directed to the charges of intemperance and not to the crimes caused by it. What the judges spoke so much of was not the mere fact that crimes were intemperate crimes, but that the original cause from which the crime sprung was the intemperate indulgence either by the individual himself or by others. Mr. Hepple Hall referred to the consumption of whisky in Ireland. He (Mr. Bourne) would not at all retract the statement he had made. There was no question whatever that the misery in Ireland arose in great degree from the pauperism of the people, and that in its turn was in a large measure the result of their intemperance. Seeing that it was capable of proof that in the worst year in Ireland more than the whole rental of the country was spent in whisky, he would assert that if the money had been in the pockets of the people, they would have been willing to pay their rents, and there need have been no difficulty or disturbance about it. Besides which, the hereditary tendency to idleness, and the stirring up of all the evil passions of human nature by the consumption of drink, went fully to bear out the observations he had made. Mr. Dawson Burns was rather disappointed that the question had not been put more as one of £ *s. d.* He had studiously avoided that course, because it was so very difficult to arrive at any notion of the absolute income of the country. The proportion spent in drink would not tell unless they could know the total sum, and therefore he believed that the test of numbers was better than the test of money. He had drawn attention to the fact that it was only a proportion of the producing power of the country—he believed 30 or 35 per cent.—which remained available after satisfying absolute necessities, and if he was right in saying that $3\frac{1}{2}$ millions or one-third of their producers were all that were now applicable for the purpose of creating articles of luxury or for accumulation, and then proved that 2 millions could be added to the $3\frac{1}{2}$ millions, he at once showed that they could, after making ample provision for the wants of these by reducing the amount of the country's strength spent on intoxicating liquors, add at least 40 per cent. to the wealth of the country. It was therefore impossible to exaggerate the benefits which would result if they had an addition of 40 per cent. to that which they at present enjoyed. With regard to the point as to how the revenue was to be provided for, he had shown that at least one-half the revenue raised from taxation was expended because of the consumption of alcohol, and he had fairly assumed that the other half would remain in the pockets of the people. Then no one would grumble at additional taxation in some other form if it was true that the whole of the money so to be raised was saved by not having been expended in drink. The main object of his paper was to draw a distinction between the national and personal loss, because however much they might deplore the loss to the individual, yet the greater question for them to consider was the loss to the country as a whole. It mattered very little to the community whether one pocket held the money or the other; the question was how much was altogether sacrificed, and the 50 million pounds mentioned by Mr. Giffen was a very large item as affecting the welfare of the

country. He felt much indebted for the kindly observations which had been made with regard to his paper. He believed the question was one of national importance, and deserved especial consideration at the hands of those who were charged with the government of the country.

The President (Mr. James Caird, C.B., F.R.S.), in proposing a vote of thanks to Mr. Bourne for his very able and instructive paper, said, it having been admitted on all sides that the annual expenditure in alcoholic liquors reached 130 million pounds, he had endeavoured, in order to realise that amount, to bring it to a comparison with something which they could clearly understand, and he found in so doing that 130 million pounds was nearly double the whole land rental of the United Kingdom.

MISCELLANEA.

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I.—*Mr. Newmarch, F.R.S.*

At a meeting of the Council of the Statistical Society held 13th April, 1882, the President in the chair, it was resolved, "That the Society desires to record on its minutes the great loss it has sustained by the death of one of its most eminent members—

WILLIAM NEWMARCH.

"Though during the past year he had been unable from indisposition to take any part in its proceedings, he had for more than thirty years been identified with its work, having contributed many papers on the leading economical questions of the day, and taken a prominent and guiding place in its discussions. Among his published papers, those on the 'Circulation of Bills of Exchange,' on the 'Effects of the New Supplies of Gold,' and on the 'Loans raised by W. Pitt during the French War of 1793-1801,' may be here specially mentioned. Mr. Newmarch successively held the offices of honorary secretary, editor of the *Journal*, and president of the Society, and in each capacity he largely contributed to extend its useful influence." It was also resolved, "That a letter of condolence on the part of the Council be addressed to Mr. Newmarch's widow, enclosing a copy of the foregoing resolution."

II.—*Lloyd's Statistics of Marine Casualties for the Year* 1881.

The following statistics of marine losses and casualties, furnished by *Lloyd's* from the reports made to that corporation for the year 1881, are given in continuation of similar information for previous years that have appeared exclusively in the *Journal of the Statistical Society*, commencing with 1872, and are in continuation of a similar series formerly printed and published by the Committee at *Lloyd's*, but the publication of which was discontinued.

1.—*A Table showing the Number of Wrecks and Casualties to Sailing Vessels and Steamers Compared with the Average Number and*

Sailing Vessels.	First Half-Year.				Second Half-Year.				Annual Total.			
	1881.		Average 15 previous Years.		1881.		Average 15 previous Years.		1881.		Average 15 previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
1. *Missing*	67	1·36	56	1·16	30	0·49	28	0·48	97	0·90	84	0·79
2. *Abandoned*—												
Recovered	25	0·55	31	0·64	62	1·00	40	0·70	87	0·81	71	0·67
Lost	117	2·56	116	2·40	154	2·50	130	2·23	271	2·52	246	2·31
Total	142	3·11	147	3·04	216	3·50	170	2·93	358	3·33	317	2·98
3. *Collision*—												
Not damaged	236	5·17	228	4·72	263	4·26	295	5·06	499	4·65	523	4·91
Damaged	541	11·85	559	11·55	684	11·09	650	11·19	1,225	11·41	1,209	11·35
Sunk	86	1·88	74	1·53	102	1·65	82	1·42	188	1·75	156	1·47
Total	863	18·90	861	17·80	1,049	17·00	1,027	17·67	1,912	17·81	1,888	17·73
4. Sinking from causes other than collision	153	3·35	145	3·00	199	3·23	174	2·99	352	3·28	319	3·00
5. *Stranded*—												
Got off	674	14·77	702	14·53	805	13·05	772	13·27	1,479	13·77	1,474	13·85
Not got off	439	9·62	464	9·59	614	9·95	623	10·72	1,053	9·81	1,087	10·21
Subsequent fate not reported	107	2·34	110	2·27	191	3·10	164	2·83	298	2·77	274	2·57
Total	1,220	26·73	1,276	26·39	1,610	26·10	1,560	26·82	2,830	26·35	2,836	26·63
6. Capture	—	—	3	0·06	—	—	7	0·12	—	—	10	0·09
7. Piracy	2	0·04	1	0·03	—	—	2	0·03	2	0·02	3	0·03
8. Burnt or on fire	50	1·10	65	1·35	77	1·25	74	1·27	127	1·18	139	1·30
9. Dismasted or disabled	164	3·59	193	3·99	233	3·78	276	4·75	397	3·70	469	4·40
10. Jettison of cargo under deck	79	1·73	95	1·96	96	1·55	90	1·55	175	1·63	185	1·73
11. Jettison of deck-load or washed overboard	44	0·96	54	1·12	217	3·52	124	2·13	261	2·43	178	1·67
12. Leaky	433	9·49	501	10·35	600	9·73	635	10·93	1,033	9·62	1,136	10·67
13. Loss of anchors or chains	237	5·19	223	4·61	357	5·79	262	4·50	594	5·53	484	4·55
14. Machinery damaged, &c.	—	—	—	—	—	—	—	—	—	—	—	—
15. Mutiny, sickness, casualty to crew, or refusing duty	82	1·80	114	2·36	63	1·02	113	1·94	145	1·35	227	2·13
16. Ship dmged., &c.	1,031	22·58	1,092	22·58	1,403	22·74	1,255	21·58	2,434	22·66	2,347	22·04
17. Water-logged	3	0·07	9	0·20	19	0·30	18	0·31	22	0·21	28	0·26
Number of casualts.	4,570	—	4,835	—	6,169	—	5,814	—	10,739	—	10,650	—
Number of vessels	4,327	—	4,506	—	5,769	—	5,444	—	10,096	—	9,950	—

reported in "Lloyd's List," during the Year 1881, *and the respective Percentages thereon, Percentages for the Fifteen Previous Years.*

First Half-Year.				Second Half-Year.				Annual Total.				Steamers.
1881.		Average 15 previous Years.		1881.		Average 15 previous Years.		1881.		Average 15 previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
5	0·28	7	0·67	5	0·24	3	0·24	10	0·26	9	0·43	1. *Missing*
												2. *Abandoned*—
1	0·06	1	0·06	—	—	—	—	1	0·03	1	0·05	Recovered
2	0·11	2	0·22	3	0·14	2	0·16	5	0·13	4	0·18	Lost
3	0·17	3	0·28	3	0·14	2	0·19	6	0·16	5	0·23	Total
												3. *Collision*—
259	14·72	149	15·23	276	13·14	197	17·22	585	13·86	347	16·33	Not damaged
235	13·35	124	12·68	278	13·24	156	13·61	513	13·29	280	13·18	Damaged
28	1·59	12	1·17	23	1·10	16	1·40	51	1·32	28	1·30	Sunk
522	29·66	285	29·08	577	27·48	369	32·23	1,099	28·47	655	30·81	Total
29	1·65	20	2·08	49	2·33	26	2·32	78	2·02	47	2·21	4. Sinking from causes other than collision
												5. *Stranded*—
356	20·23	209	21·31	434	20·67	236	20·56	790	20·47	444	20·91	Got off
55	3·12	34	3·49	78	3·71	46	4·02	133	3·44	80	3·77	Not got off
9	0·51	10	0·99	12	0·57	10	0·87	21	0·54	20	0·92	Subsequent fate not reported
420	23·86	253	25·79	524	24·95	292	25·45	944	24·45	544	25·60	Total
—	—	—	—	—	—	1	0·06	—	—	1	0·05	6. Capture
—	—	—	—	—	—	—	—	—	—	—	—	7. Piracy
22	1·25	25	2·59	60	2·86	28	2·47	82	2·13	54	2·52	8. Burnt or on fire
19	1·08	8	0·78	12	0·57	11	0·97	31	0·80	19	0·88	9. Dismasted or disabled
43	2·44	20	2·08	43	2·05	17	1·50	86	2·23	37	1·76	10. Jettison of cargo under deck
27	1·54	7	0·76	32	1·52	14	1·18	59	1·53	21	0·98	11. Jettison of deckload or washed overboard
56	3·18	25	2·54	34	1·62	24	2·14	90	2·33	49	2·32	12. Leaky
22	1·25	11	1·14	31	1·48	12	1·03	53	1·38	23	1·08	13. Loss of anchors or chains
288	16·36	187	19·12	332	15·80	207	18·06	620	16·06	394	18·55	14. Machinery damaged or short of coals
7	0·40	10	1·01	14	0·67	10	0·85	21	0·54	20	0·93	15. Mutiny, sickness, casualty to crew, or refusing duty
297	16·88	118	12·04	384	18·29	129	11·29	681	17·64	247	11·64	16. Ship dmgd., &c.
—	—	—	—	—	—	—	—	—	—	—	—	17. Water-logged
1,760	—	979	—	2,100	—	1,146	—	3,860	—	2,125	—	Number of casualties
1,720	—	940	—	2,059	—	1,114	—	3,779	—	2,054	—	Number of steamers

2.—*A Table showing the Results of Wrecks and Casualties to Ship and to Cargo, with Salvage during the Year* 1881, *and the respective Percentages thereon, Compared*

Sailing Vessels.	First Half-Year.				Second Half-Year.				Annual Total.			
	1881.		Average 15 previous Years.		1881.		Average 15 previous Years.		1881.		Average 15 previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Results to Ship—												
Total loss	854	19·64	822	18·23	1,107	19·19	1,023	18·79	1,961	19·42	1,844	18·54
Constructive loss	68	1·57	85	1·90	49	0·85	78	1·43	117	1·16	163	1·64
Great damage	412	9·53	470	10·44	566	9·81	610	11·20	978	9·69	1,080	10·86
Minor damage	1,972	45·63	2,130	47·27	2,788	48·33	2,498	45·89	4,760	47·15	4,629	46·51
Raised after sinking	22	0·51	22	0·49	24	0·41	19	0·36	46	0·45	42	0·42
Not damaged or results unknown	999	23·12	976	21·67	1,235	21·41	1,216	22·33	2,234	22·13	2,191	22·03
Total	4,327	—	4,506	—	5,769	—	5,444	—	10,096	—	9,950	—
Results to Cargo so far as reported—												
All lost	453	10·37	452	10·04	478	8·29	489	8·98	931	9·22	941	9·46
Part lost	174	4·03	237	5·27	384	6·66	300	5·51	458	4·54	537	5·40
All saved	8	0·19	17	0·38	21	0·36	15	0·27	29	0·29	32	0·32
Forwarded	22	0·51	14	0·31	4	0·07	9	0·17	26	0·26	23	0·23
Heated	7	0·16	9	0·20	5	0·09	9	0·17	12	0·12	18	0·18
Shifted	57	1·33	60	1·33	64	1·11	69	1·27	121	1·20	129	1·30
Otherwise damaged	93	2·15	84	1·85	77	1·33	78	1·44	170	1·68	162	1·61
Salvage Services	253	5·85	427	9·48	361	6·26	485	8·92	614	6·08	915	9·19
Lives—												
Crews saved	521	12·05	437	9·69	720	12·48	531	9·75	1,241	12·29	968	9·72
Crews drowned	96	2·08	53	1·17	70	1·21	43	0·79	166	1·64	96	0·96
Lives lost so far as reported (in both ships and steamers)	1,236	—	931	—	1,003	—	841	—	2,239	—	1,772	—

Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's List," with the Average Number and Percentages for the Fifteen Previous Years.

First Half-Year.				Second Half-Year.				Annual Total.				Steamers.
1881.		Average 15 previous Years.		1881.		Average 15 previous Years.		1881.		Average 15 previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
												Results to Ship—
102	5·93	69	7·34	153	7·43	88	7·89	255	6·75	157	7·63	Total loss
5	0·29	4	0·44	1	0·05	3	0·28	6	0·16	7	0·37	Constructive loss
91	5·29	60	6·43	115	5·59	80	7·21	206	5·45	141	6·85	Great damage
859	49·94	424	45·15	1,014	49·25	475	42·65	1,873	49·56	899	43·79	Minor damage
19	1·11	7	0·77	16	0·77	8	0·76	35	0·93	16	0·76	Raised after sinking
644	37·44	375	39·87	760	36·91	459	41·21	1,404	37·15	834	40·60	Not damaged or results unknown
1,720	—	940	—	2,059	—	1,114	—	3,779	—	2,054	—	Total
												Results to Cargo so far as reported—
40	2·33	29	3·05	52	2·52	33	2·93	92	2·43	61	2·98	All lost
101	5·87	44	4·74	121	5·88	52	4·66	222	5·87	96	4·69	Part lost
—	—	1	0·14	6	0·29	1	0·10	6	0·16	2	0·12	All saved
1	0·06	1	0·11	—	—	1	0·08	1	0·03	2	0·09	Forwarded
2	0·12	1	0·11	2	0·10	1	0·11	4	0·11	2	0·11	Heated
29	1·69	13	1·35	38	1·84	17	1·54	67	1·77	30	1·45	Shifted
38	2·21	25	2·61	57	2·77	30	2·68	95	2·51	54	2·64	Otherwise damaged
89	5·17	79	8·42	88	4·27	82	7·40	177	4·68	160	7·80	*Salvage Services*
												Lives—
62	3·61	34	3·66	71	3·45	39	3·46	133	3·52	73	3·55	Crews saved
7	0·41	6	0·62	9	0·44	3	0·27	16	0·42	9	0·43	Crews drowned
—	—	—	—	—	—	—	—	—	—	—	—	Lives lost so far as reported (in both ships and steamers)

3.—*A Table showing the Number of Wrecks and Casualties to Sailing Vessels reported Compared with the Average Number and Percentages*

Sailing Vessels.	First Quarter.				Second Quarter.			
	1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.	
	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.
1. *Missing*	37	1·28	26	0·87	30	1·49	30	1·65
2. *Abandoned*—								
Recovered	15	0·52	19	0·62	10	0·59	12	0·66
Lost	66	2·29	70	2·30	51	3·03	46	2·57
Total	81	2·81	89	2·92	61	3·62	58	3·23
3. *Collision*—								
Not damaged	134	61·65	136	4·48	102	6·07	92	5·12
Damaged	303	10·51	345	11·32	238	14·14	214	11·96
Sunk	45	1·56	43	1·41	41	2·44	31	1·72
Total	482	16·72	524	17·21	381	22·65	337	18·80
4. Sinking from causes other than collision	82	2·84	80	2·65	71	4·22	64	3·59
5. *Stranded*—								
Got off	399	13·84	404	13·26	275	16·35	299	16·69
Not got off	318	11·03	294	9·66	121	7·19	169	9·48
Subsequent fate not reported	83	2·88	72	2·36	24	1·43	38	2·10
Total	800	27·75	770	25·28	420	24·97	506	28·27
6. Capture	—	—	1	0·05	—	—	1	0·08
7. Piracy	1	0·03	1	0·03	1	0·06	1	0·03
8. Burnt or on fire	27	0·94	36	1·17	23	1·37	29	1·65
9. Dismasted or disabled	104	3·61	114	3·71	60	3·57	79	4·44
10. Jettison of cargo under deck	57	1·98	62	2·04	22	1·31	33	1·84
11. Jettison of deckload or washed overboard	29	1·01	33	1·10	15	0·89	21	1·16
12. Leaky	261	9·05	314	10·29	172	10·23	187	10·47
13. Loss of anchors or chains	178	6·17	175	5·75	59	3·51	48	2·66
14. Mutiny, sickness, casualty to crew, or refusing duty	47	1·63	70	2·30	35	2·08	44	2·48
15. Ship damaged, loss of bulwarks, sails, &c.	696	24·14	745	24·46	335	19·91	347	19·39
16. Water-logged	1	0·03	5	0·16	2	0·12	5	0·26
Number of casualties	2,883	—	3,045	—	1,687	—	1,790	—
Number of vessels	2,697	—	2,811	—	1,630	—	1,695	—

in "Lloyd's List," during the Four Quarters of 1881, *and the respective Percentages thereon, for the same period of the Fifteen Previous Years.*

Third Quarter.				Fourth Quarter.				Sailing Vessels.
1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.		
Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	
5	0·23	15	0·78	25	0·57	13	0·33	1. *Missing*
11	0·62	11	0·61	51	1·16	29	0·74	2. *Abandoned*— Recovered
36	2·04	34	1·77	118	2·68	96	2·45	Lost
47	2·66	45	2·38	169	3·84	125	3·19	Total
98	5·54	114	5·97	165	3·75	181	4·63	3. *Collision*— Not damaged
278	15·72	245	12·85	406	9·23	405	10·36	Damaged
40	2·26	33	1·74	62	1·41	49	1·26	Sunk
416	23·52	392	20·56	633	14·39	635	16·25	Total
61	3·45	67	3·50	138	3·14	107	2·75	4. Sinking from causes other than collision
298	16·85	289	15·12	507	11·52	483	12·37	5. *Stranded*— Got off
139	7·86	182	9·52	475	10·80	442	11·31	Not got off
31	1·75	45	2·38	160	3·64	119	3·05	Subsequent fate not reported
468	26·46	516	27·02	1,142	25·96	1,044	26·73	Total
—	—	3	0·14	—	—	4	0·11	6. Capture
—	—	1	0·06	—	—	1	0·01	7. Piracy
28	1·58	32	1·66	49	1·11	42	1·09	8. Burnt or on fire
82	4·63	96	5·02	151	3·43	180	4·61	9. Dismasted or disabled
25	1·41	30	1·58	71	1·61	60	1·53	10. Jettison of cargo under deck
37	2·09	21	1·12	180	4·09	102	2·62	11. Jettison of deckload or washed overboard
200	11·31	236	12·36	400	9·09	399	10·22	12. Leaky
42	2·37	47	2·47	315	7·16	215	5·50	13. Loss of anchors or chains
25	1·41	47	2·45	38	0·86	66	1·70	14. Mutiny, sickness, casualty to crew, or refusing duty
324	18·32	355	18·63	1,080	24·55	899	23·03	15. Ship damaged, loss of bulwarks, sails, &c.
10	0·56	5	0·25	9	0·20	13	0·33	16. Water-logged
1,770	—	1,909	—	4,400	—	3,906	—	Number of casualties
1,715	—	1,820	—	4,054	—	3,624	—	Number of vessels

4.—*A Table showing the Number of Wrecks and Casualties to Steamers reported in*
Compared with the Average Number and Percentages

Steamers.	First Quarter.				Second Quarter.			
	1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.	
	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.
1. *Missing*	4	0·38	5	0·81	1	0·14	2	0·47
2. *Abandoned*—								
Recovered	—	—	—	—	1	0·14	—	—
Lost	2	0·19	1	0·06	—	—	1	0·21
Total	2	0·19	2	0·24	1	0·14	1	0·27
3. *Collision*—								
Not damaged	133	12·77	82	14·58	126	17·52	67	16·13
Damaged	138	13·26	74	13·05	97	13·49	50	12·15
Sunk	16	1·54	7	1·24	12	1·67	4	1·08
Total	287	27·57	163	28·87	235	32·68	121	29·36
4. Sinking from causes other than collision	17	1·63	11	2·01	12	1·67	9	2·18
5. *Stranded*—								
Got off	206	19·79	113	19·94	150	20·86	96	23·20
Not got off	31	2·98	20	3·45	24	3·34	14	3·53
Subsequent fate not reported	7	0·67	6	1·07	2	0·28	4	0·87
Total	244	23·44	139	24·46	176	24·48	114	27·60
6. Capture	—	—	—	—	—	—	—	—
7. Piracy	—	—	—	—	—	—	—	—
8. Burnt or on fire	11	1·06	12	2·14	11	1·53	13	3·20
9. Dismasted or disabled	13	1·25	5	0·85	6	0·84	3	0·68
10. Jettison of cargo under deck	25	2·40	11	1·90	18	2·50	10	2·32
11. Jettison of deckload or washed overboard	25	2·40	5	0·97	2	0·28	2	0·47
12. Leaky	34	3·27	14	2·47	22	3·06	11	2·63
13. Loss of anchors or chains	17	1·63	8	1·44	5	0·69	3	0·74
14. Machinery damaged or short of coals	155	14·88	103	18·22	133	18·50	84	20·34
15. Mutiny, sickness, casualty to crew, or refusing duty	3	0·29	6	0·98	4	0·56	4	1·07
16. Ship damaged, loss of sails, bulwarks, &c.	204	19·60	82	14·56	93	12·93	35	8·59
17. Water-logged	—	—	—	—	—	—	—	—
Number of casualties	1,041	—	566	—	719	—	413	—
Number of steamers	1,022	—	545	—	698	—	395	—

"Lloyd's List," during the Four Quarters of 1881, *and the respective Percentages thereon, for the same period of the Fifteen Previous Years.*

Third Quarter.				Fourth Quarter.				Steamers.
1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.		
Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	Number.	Per-centage.	
—	—	—	—	5	0·35	2	0·31	1. *Missing*
—	—	—	—	—	—	—	—	2. *Abandoned*—
—	—	1	0·14	3	0·21	1	0·16	Recovered Lost
—	—	1	0·15	3	0·21	1	0·21	Total
94	14·40	83	18·88	182	12·58	114	16·18	3. *Collision*—
109	16·69	64	14·56	169	11·68	91	13·01	Not damaged
6	0·92	7	1·60	17	1·17	9	1·28	Damaged Sunk
209	32·01	155	35·04	368	25·43	214	30·47	Total
14	2·14	10	2·16	35	2·42	17	2·42	4. Sinking from causes other than collision
150	22·97	96	21·79	284	19·63	139	19·78	5. *Stranded*—
19	2·91	17	3·76	59	4·08	29	4·19	Got off Not got off
3	0·46	3	0·75	9	0·62	7	0·95	Subsequent fate not reported
172	26·34	116	26·30	352	24·33	175	24·92	Total
—	—	—	—	—	—	1	0·09	6. Capture
—	—	—	—	—	—	—	—	7. Piracy
32	4·90	12	2·84	28	1·94	16	2·25	8. Burnt or on fire
2	0·31	3	0·66	10	0·69	8	1·15	9. Dismasted or disabled
8	1·22	7	1·70	35	2·42	10	1·37	10. Jettison of cargo under deck
5	0·77	2	0·53	27	1·86	11	1·59	11. Jettison of deckload or washed overboard
9	1·38	9	1·99	25	1·73	16	2·24	12. Leaky
4	0·61	3	0·69	27	1·86	9	1·24	13. Loss of anchors or chains
130	19·91	90	20·30	202	13·96	117	16·66	14. Machinery damaged or short of coals
4	0·61	5	1·12	10	0·69	5	0·69	15. Mutiny, sickness, casualty to crew, or refusing duty
64	9·80	28	6·38	320	22·11	101	14·38	16. Ship damaged, loss of sails, bulwarks, &c.
—	—	—	—	—	—	—	—	17. Water-logged
653	—	442	—	1,447	—	704	—	Number of casualties
654	—	430	—	1,405	—	684	—	Number of steamers

5.—*A Table showing the Results of Wrecks and Casualties to Ship and to Cargo, with List," during the Four Quarters of* 1881, *and the respective Percentages thereon, Previous Years.*

	Sailing Vessels.							
	First Quarter.				Second Quarter.			
	1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Results to Ship—								
Total loss	544	20·17	494	17·57	310	18·77	328	19·35
Constructive loss	43	1·59	50	1·78	25	1·54	36	2·10
Great damage	246	9·12	295	10·49	166	10·22	175	10·35
Minor damage	1,238	45·90	1,390	49·44	734	45·17	740	43·67
Raised after sinking	12	0·45	12	0·45	10	0·61	10	0·56
Not damaged or results unknown	614	22·77	570	20·27	385	23·69	406	23·97
Total	2,697	—	2,811	—	1,630	—	1,695	—
Results to Cargo so far as reported—								
All lost	279	10·34	285	10·13	174	10·40	167	9·87
Part lost	120	4·45	148	5·27	54	3·32	88	5·21
All saved	5	0·18	12	0·42	3	0·18	5	0·32
Forwarded	15	0·56	9	0·32	7	0·43	5	0·32
Heated	6	0·22	6	0·23	1	0·06	3	0·17
Shifted	36	1·35	40	1·24	21	1·29	19	1·15
Otherwise damaged	67	2·32	48	1·73	26	1·60	35	2·06
Salvage services	171	6·34	279	9·93	82	5·05	148	8·75
Lives—								
Crews saved	329	12·20	271	9·62	192	11·82	166	9·81
Crews drowned	66	2·29	29	1·05	30	1·48	23	1·33
Lives lost so far as reported (in both ships and steamers)	627	—	461	—	609	—	476	—

Salvage Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's Compared with the Average Number and Percentages for the same period of the Fifteen

Sailing Vessels.								
Third Quarter.				Fourth Quarter.				
1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
								Results to Ship—
281	16·34	325	17·84	826	20·37	698	19·26	Total loss
31	1·81	37	2·01	18	0·44	41	1·13	Constructive loss
169	9·86	204	11·23	397	9·80	405	11·19	Great damage
811	47·32	800	43·97	1,977	48·77	1,698	46·86	Minor damage
9	0·53	9	0·50	15	0·37	10	0·29	Raised after sinking
414	24·14	445	24·45	821	20·25	771	21·27	Not damaged or results unknown
1,715	—	1,820	—	4,054	—	3,624	—	Total
								Results to Cargo so far as reported—
127	7·41	157	8·62	351	8·66	322	9·15	All lost
90	5·25	84	4·62	294	7·25	216	5·94	Part lost
3	0·17	5	0·28	18	0·44	10	0·27	All saved
4	0·23	5	0·26	—	—	4	0·12	Forwarded
3	0·17	4	0·23	2	0·05	5	0·14	Heated
17	0·99	16	0·91	47	1·16	53	1·45	Shifted
36	2·10	35	1·91	41	1·01	43	1·18	Otherwise damaged
113	6·59	157	8·64	248	6·12	329	9·02	Salvage services
								Lives—
178	10·38	165	9·04	542	13·37	366	10·08	Crews saved
7	0·41	13	0·75	63	1·55	29	0·81	Crews drowned
215	—	273	—	788	—	568	—	Lives lost so far as reported (in both ships and steamers)

6.—*A Table showing the Results of Wrecks and Casualties to Ship and to Cargo, with List," during the Four Quarters of* 1881, *and the respective Percentages thereon, Previous Years.*

	Steamers.							
	First Quarter.				Second Quarter.			
	1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.	
	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Results to Ship—								
Total loss	56	5·48	41	7·52	46	6·59	28	7·09
Constructive loss	2	0·20	3	0·47	3	0·43	2	0·40
Great damage	51	4·99	34	6·30	40	5·73	26	6·60
Minor damage	514	50·29	252	46·25	345	49·43	172	43·64
Raised after sinking	13	1·27	4	0·71	6	0·86	3	0·86
Not damaged or results unknown	386	37·77	211	38·75	258	36·96	164	41·41
Total	1,022	—	545	—	698	—	395	—
Results to Cargo so far as reported—								
All lost	27	2·64	18	3·29	13	1·86	11	2·72
Part lost	66	6·46	24	4·42	35	5·01	20	5·15
All saved	—	—	1	0·13	—	—	1	0·15
Forwarded	1	0·10	1	0·10	—	—	—	—
Heated	2	0·20	1	0·11	—	—	—	—
Shifted	23	2·25	10	1·79	6	0·86	3	0·74
Otherwise damaged	24	2·35	14	2·50	14	2·01	11	2·77
Salvage services	59	5·77	41	7·57	30	4·30	38	9·58
Lives—								
Crews saved	38	3·72	21	3·72	24	3·44	14	3·58
Crews drowned	4	0·39	4	0·80	3	0·43	1	0·37
Lives lost so far as reported in both ships and steamers (see Sailing Vessels, *supra*)	—	—	—	—	—	—	—	—

Salvage Services, Crews Saved or Drowned and Lives Lost, so far as reported in "Lloyd's Compared with the Average Number and Percentages for the same period of the Fifteen

Steamers.								
Third Quarter.				Fourth Quarter.				
1881.		Average Fifteen previous Years.		1881.		Average Fifteen previous Years.		
Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	
								Results to Ship—
40	6·12	32	7·50	113	8·04	56	8·13	Total loss
—	—	2	0·36	1	0·07	2	0·23	Constructive loss
40	6·12	31	7·31	75	5·34	49	7·14	Great damage
316	48·32	179	41·69	698	49·68	294	43·26	Minor damage
6	0·92	3	0·71	10	0·71	5	0·79	Raised after sinking
252	38·52	182	42·43	508	36·16	277	40·45	Not damaged or results unknown
654	—	430	—	1,405	—	684	—	Total
								Results to Cargo so far as reported—
8	1·22	13	3·10	44	3·13	20	2·88	All lost
30	4·59	19	4·37	91	6·48	33	4·83	Part lost
—	—	—	—	6	0·43	1	0·11	All saved
—	—	1	0·12	—	—	—	—	Forwarded
2	0·30	1	0·12	—	—	1	0·10	Heated
8	1·22	3	0·63	30	2·13	14	2·11	Shifted
22	3·36	12	2·68	35	2·49	20	2·87	Otherwise damaged
34	5·20	35	8·11	54	3·84	47	6·95	Salvage services
								Lives—
21	3·21	15	3·49	50	3·56	24	3·45	Crews saved
—	—	1	0·08	9	0·64	2	0·36	Crews drowned
—	—	—	—	—	—	—	—	Lives lost so far as reported in both ships and steamers (see Sailing Vessels, *supra*)

III.—*Bad Harvests and Agricultural Depression.*

The following is taken from the *Times* of 7th January, 1882:—

"We have received for publication the following letter, which was addressed a few weeks ago by Mr. Giffen to the President of the Board of Trade:—

"'The Right Hon. Joseph Chamberlain, M.P., President of the Board of Trade.

"'Dear Sir,—I beg leave to submit to you some estimates and conclusions at which I have arrived, on the subject of the agricultural depression in the United Kingdom during the last few years, premising that the statements I have to make are entirely unofficial. In my inquiries I have had to make frequent use of unofficial data, and I have had no official data before me except the published returns of acreage and live stock, and of imports and exports which are in the hands of the public.

"'The point to which I have mainly addressed myself has been the question whether any distinction could be made between the decline in agricultural production, owing to the recent bad harvests and any other causes of agricultural depression, such as a fall in the prices of produce, or a rise in rents, or a rise in the wages of labour. The community, it has appeared to me, is interested in these various causes of agricultural depression in different ways. A loss arising through a deficiency of production is a total loss to the whole community. There are fewer things produced, and the community is so much the poorer. It has either to do without them altogether, and endure, therefore, so much privation, or it has to purchase them elsewhere, expending a certain quantity of labour and capital in the purchase. But depression of the agricultural interests due to a fall of prices or rise in rents does not concern the community as a whole so directly. What one class of the community may lose by the operation of these causes another gains, and so they are less important in one aspect than a decline in agricultural production, though it is, of course, quite true that the disturbance of a great industry, no matter from what cause, is injurious, directly or indirectly, not merely to the industry affected, but to the whole community.

"'In endeavouring to answer the question which I have put before myself, it has occurred to me that an excellent mode of obtaining an answer would be to compare the imports of agricultural products similar to those produced at home at different dates; to allow for the increase of these products required by the increase of population in the interval between the dates selected, and then to bring out the difference, which ought to correspond approximately with the deficiency or surplus of the home harvest in the latter period compared with the former, provided there has been no change on the one side in the capacity of agricultural production, or on the other side in the consuming power of the population. The difference, if there is a deficiency, should not only show the deficiency itself approximately, but what the country has actually

paid to supply it; and if there is a surplus, it will be seen what the country has actually saved. In the present case there is no question, of course, of a surplus, but only of a deficiency. One advantage, at least, of this mode of comparison is that the result is necessarily an average one, and is independent of any error that might arise in selecting individual instances of farming losses from which to deduce an average figure, a task which must be most difficult in dealing with so extensive and varied an industry as that of home agriculture. It must be useful, in any case, to compare an average deduced in the way here suggested with other calculations.

"'Applying this method, and leaving over for the present the corrections necessary for an increased or diminished capacity of agricultural production, or an increased or diminished consuming power of the population, what I have first to state are the figures as to the increase of imports in recent years. My starting-point is the years 1867-69, partly because these were the years in which the agricultural returns commenced, so that from that date, at least, we can compare estimates of production at home based on actual returns of acreage and live stock with the imports from abroad, and partly because these years were also years of trade depression, so that the consuming power of the country, apart from any permanent change, was probably much the same as in recent years of trade depression; at least, it would be affected by the trade depression at both times in much the same way. What I find then, is, comparing the most general figures of values, that the imports of agricultural products, as you will perceive from the annexed table,* amounted annually in 1867-69 to 79 million pounds, and in 1877-79, exactly ten years later, to 129 million, an increase, therefore, of 50 million pounds in the ten years. In 1878-80 the average annual imports were a little larger than in 1877-79, viz., 133 million pounds, making the increase from 1867-69 54 millions; but the interval of time from 1867-69 is eleven years, so that a larger allowance has to be made for the increase of population. I have next to allow for the increase of population, and, taking as the basis Mr. Caird's estimate of the consumption of agricultural products in 1877 in his book on the "Landed Interest," with one or two slight additions for differences of price and other causes, I have to propose the figure of 12*l.* per head.† Now, the increase of population between 1867-69 and 1877-79 was 3,180,000, and the increased supply for them of agricultural products, at 12*l.* per head, would be rather more than 38 million pounds, deducting which sum from the above increase of 50 millions in the imports, would leave 12 million pounds a year as representing approximately the amount of the annual deficiency in our home harvests which we had to import in 1877-79. The increase of population again, between 1867-69 and 1878-80 is 3,520,000, and the increased supply for them of agricultural products at 12*l.* per head would be 42 million pounds, deducting which sum from the above increase of

* This table, it will be observed, is compiled from the Tables IX, X, and XI in the last Agricultural Returns, pp. 64 to 89, with an addition for wool, so as to make it more complete.

† Population in 1877, 33,447,000; gross agricultural products consumed, 400 million pounds; average per head, 12*l.*

54 million pounds in the imports, would still leave 12 million a year as representing approximately the amount of the deficiency in our home harvests which we had to import in 1878-80. We may say, then, that in the last four years the deficiency in our home harvests, as compared with a period ten or eleven years before, has been such as to cause us to import about 12 million pounds worth more a year than we should otherwise have done.

"'This is a rough comparison, however. The defect of it is that it does not allow for the differences of price at different periods. Theoretically, it is quite conceivable that, owing to a fall of price, the imports in recent years might have been no more in value than in 1867-69, although an increasing population, as well as a deficiency in the home harvest, had to be provided for. It is also conceivable that the increased value of the imports in recent years might have been due exclusively to a rise in price, and not to an increase in quantity. I have made some attempt, therefore, to exclude any variation which might be due to price. This is done by ascertaining what is the increase of quantities, and then calculating the value of that increase at the prices of different periods. I beg to refer you for details to Table II annexed, from which it appears that the increase in quantities between 1867-69 and 1872-74 of those articles, where quantities as well as values are stated, almost the entire number, would amount in value, at the prices of 1867-69, to 29,390,000*l.*, and, at the prices of 1872-74, to 27,172,000*l.*, the actual increase of value of all articles between the two dates being 26,000,000*l.* only. According to this, and assuming that the differences in the average prices of the amounts of the increased imports correspond to the differences of price generally, there was apparently a fall of very nearly 8 per cent. on the average in the prices of the imports between 1867-69 and 1872-74, so that the actual increase of value was less than the value of the increase of quantities at either the prices of 1867-69 or 1872-74. Again, between 1872-74 and 1878-80 the increase in quantities at the prices of 1867-69 would amount in value to 40,775,000*l.*; at the prices of 1872-74, to 38,698,000*l.*; and at the prices of 1878-80, to 34,802,000, showing again a further apparent fall of price, the difference on this showing between the prices of 1867-69 and 1878-80 amounting to about 15 per cent., and the difference between the prices of 1872-74 and 1878-80 to about 10 per cent. From this it follows that, while the whole increase of value between 1867-69 and 1878-80 is 54 million pounds, the increase of quantities at the prices of different periods would be valued as follows:— At the prices of 1867-69, 69 million pounds; at the prices of 1872-74, 65 million pounds; at the prices of 1878-80, 60 million pounds. It appears, also, that the prices of 1878-80 correspond most nearly with the prices at which the valuation of 12*l.* per head as the consumption of agricultural products was arrived at. Instead, therefore, of comparing the above estimate of 42 million pounds, as the amount required for increase of population between 1867-69 and 1878-80, with the above figure of 54 million pounds, the actually increased value of the imports between the two dates, we ought rather to compare it with the above figure of 60 million pounds,

the value of the increase of quantities at the prices of 1878-80. According to this showing, the annual harvest deficiency of the last three years which we have had to import would be represented approximately by a sum, not of 12 million pounds, but of 18 million pounds. The average deficiency of 1877-79 would probably be nearly as great, I think, judging by a rough comparison of prices, so that we might count back over four years; but I have not thought it necessary to go into full details, except for the last three years, when the agricultural depression culminated.

"'To test the matter another way, I have taken out the different quantities of our increased imports, allowed for the increased quantity required for increasing population, according to Mr. Caird's estimate in his book on the 'Landed Interest' of the quantity consumed, and then valued the differences at the prices of 1878-80, making one or two corrections for the increased consumption of articles produced at home and not imported, such as milk and hay and straw. The result is shown in Table III annexed,* the excess of imports by this method above what was required for increasing population being also about 18 million pounds. The following is a summary of this table:—

	Quantity.	Value.
	cwts.	£
Additional wheat imported in excess of increase of population	13,860,000	7,540,000
Additional barley	— 479,000	— 198,000
„ oats	— 3,216,000	— 1,124,000
„ beans and peas	— 1,105,000	— 439,000
„ maize	21,784,000	6,339,000
„ potatoes	— 5,039,000	— 1,434,000
„ wool	169,000	1,081,000
„ animals, bacon, hams, and pork	3,500,000	7,525,000
„ cheese and butter	1,113,000	3,993,000
Total	—	23,283,000
Deduct—		
Increase of milk consumed at home proportioned to increase of population, and displacing supply of milk available for butter and cheese	£2,700,000	
Increase of other articles produced at home and not imported	2,300,000	
		5,000,000
Net total		18,283,000

"'This table would also seem to correspond broadly with the popular accounts of the bad harvests. Of the deficiency of 18 million pounds, about two-thirds is a deficiency of grain crops, the production of about one-fourth to one-fifth of our home acreage, and the remainder is a deficiency of other articles, the production of the remaining four-fifths of our acreage. This corresponds to the much greater complaints of bad harvests from the corn growing than from the grazing districts.

* This table is not reprinted here.

"'Two points, however, are still left unsettled—viz., the increase or decrease of producing capacity at home, and the increase or decrease of the consuming power of the population. On the former head I must speak with some diffidence, but I am assured by the highest agricultural authority that the conclusion at which the figures seem to point is probably correct. This is that there was no increase in the capacity of gross agricultural production between 1867-69 and 1878-80. In those years the increase of the cultivated area was about 1,800,000 acres (from 45,600,000 to 47,400,000 acres), or 4 per cent.; but the increase of gross produce due to such increased acreage cannot fairly be put, I think, at more than 2 per cent., allowing for the fact that the additions to the cultivated area have mainly been of mountain or waste land, which probably contributed a little to the agricultural production before enclosure, and which would not as a rule, when enclosed, be equal to the average land of the country. Two per cent. on a total home production of about 270 million pounds would be under 5,500,000*l.* On the other side, however, has to be set the fact that in the same period the transfer of land from 'arable' to permanent pasture amounted to about 1 million acres, and, estimating that this involved a reduction of the gross produce of 5*l.* per acre, the diminution would almost exactly correspond to the production of the increased area of cultivated land. Of course, there remains the question whether there may not be an increased capacity of production owing to the expenditure of capital on the land, irrespective of additions to the cultivated area, and perhaps there ought to be some addition on this account; but it cannot be a great amount. The conclusion would be that the above comparison of the increase of imports with the amounts required for increasing population is not seriously affected by any question of the increased capacity of production at home.

"'As regards the other point of a change in the consuming power of the population, what I have already said as to the reasons for selecting 1867-69 as the starting point may be sufficient to show that no question of a reduction of the consuming power need be considered. As regards an increase, the best authorities, I believe, are inclined to hold that there has been some increase in the consumption of wheat per head; and it would be fair to assume, from the analogy of such articles as sugar, tea, and the like, that there has also been some increase in the consumption of meat per head. It would also appear that the apparent deficiency of production at home shown by the increased imports of meat, butter, and cheese, is inconsistent with the fact that the capacity of production, as far as the numbers of live stock are concerned, is unchanged in the eleven years. There is no doubt that the numbers of live stock have diminished in recent years, but when we go back a certain time, no diminution is observable. We get the following comparison:—

	Mean of 1867-69.	Mean of 1878-80.	Increase.
Cattle	9,000,000	9,800,000	800,000
Sheep	34,000,000	32,000,000	— 2,000,000
Pigs	3,400,000	3,300,000	— 100,000

"'Here the increase of cattle more than compensates the decrease of sheep and pigs as regards meat, and quite agrees with the fact that the increased imports of butter and cheese, allowing for the increase of milk consumed at home, are comparatively small. I am inclined to think, then, that the large increase of meat imports is partly at least to be accounted for by an increase of the consuming power of the population and not by a falling off in the home production, as compared with 1867-69. The only other hypothesis is that there has been a deterioration in the quality and quantity of the meat produced from the same number of animals, an opinion held by many good authorities, but with which I must confess I am dissatisfied. The difference to be accounted for amounts to nearly 10 per cent., and I doubt so great a deterioration in production without a diminution of numbers. If there had been less food to feed the stock, leading to their being earlier killed, this change would undoubtedly have shown itself in a reduction of the numbers in the annual census; but there has been no reduction beyond what has already been taken into account. The conclusion, therefore, would be that the above figure of 18 million pounds, as representing the average annual diminution of the home harvest during the last few years, as compared with 1867-69, is a *maximum* figure, and that some reduction ought to be made from it, if we could properly estimate what the increased consumption of meat per head has been. By 'splitting the difference,' and allowing that a moiety of the excess imports of meat is due to the increased consuming power (which, after all, would only be 2*s*. 6*d*. per head) of the population, and a moiety to a deterioration of the production of live stock, apart from a diminution of their numbers, we should deduct a sum of about 4 million pounds from the deficiency, and make it 14 million pounds, instead of 18 million pounds.

"'I am not concerned, however, to state an exact figure. A difference of 2 or 3 million pounds only would not by itself be very important; 14 or 18 million pounds would be much the same thing to the agricultural interests and the community. In such matters it would be hardly possible by any statistics and any mode of calculation to get a more exact figure.

"'It is quite clear that whichever figure we take, it gives a different impression of the recent bad harvests from what is commonly entertained. On the total agricultural production, which we have taken at 270 millions, a difference of 18 millions is only $6\frac{1}{2}$ per cent. If such a reduction annually in the gross produce is the total effect of a series of bad harvests, which are said to be unprecedented, the conclusion must surely be that the effect of bad harvests on the agricultural production of a country like the United Kingdom is usually very small, perhaps too small to be considered as in any way material. Agriculture, in fact, as far as the quantities produced are concerned, would seem in the United Kingdom to be a very stable industry. This stability is apparently connected with the small proportion of corn crops to the total crops. The production of meat, and butter, and cheese in a climate like that of the United Kingdom is liable to smaller variations than that of corn. Hence, although wheat falls off below an average as much as 25 or

30 per cent., and other cereal crops in proportion, the total falling off in all the crops together is only about 6½ per cent., even in years of unprecedented bad harvests.

"'But there is no doubt about the fact of extreme agricultural depression, and the question remains as to how the above facts, as to the probable deficiency due to the bad harvests, are to be reconciled with the accounts of the depression. Without going into questions and details which the Royal Commission is now elaborately considering, I have to suggest on a broad view of the facts one or two circumstances which must have pressed severely on agriculturists in recent years, irrespective altogether of deficient harvests:—

"'1. There was apparently some increase of agricultural production between 1867-69 and 1872-74 which has not been maintained. If we go back to 1867-69 we find that the live stock is now as great as it was then; but there has been a decrease since 1874, viz.:—

	1874.	1880.	Decrease.
Cattle	10,281,000	9,871,000	410,000
Sheep	34,837,000	30,239,000	4,598,000
Pigs	3,537,000	2,863,000	674,000

"'The annual produce of the numbers by which the stock has thus been diminished would hardly be less than 10 million pounds, but *per contra* there has been some increase of the stock of horses, which is an agricultural product as well as an instrument of production. The year 1874 was also a *maximum* year, and if we compare the mean of 1872-74 with the mean of 1878-80 we should find a reduction of stock of only about half that amount. We may reckon then, that although a sum of 14 to 18 million pounds represents the deficiency of agricultural production as compared with 1867-69, an addition of about 5 million pounds at least would have to be made to these figures to represent the additional deficiency, which becomes apparent on a comparison being made, not with an average period like 1867-69, but with highly prosperous years immediately preceding the depression.

"'2. Between 1867-69 and a date prior to the recent depression there was a considerable increase of rent. The increase in schedule B, between 1868 and 1877, allowing for the change in the form of stating the Irish assessments, is about 5 million pounds. We may take it that subsequent to 1867-69, and before the late depression, rents were increased at least about 5 million pounds.

"'3. There has also been some advance in the wages of labour. Wages bills on many farms do not seem to have increased, but there appears to be no doubt respecting an increase in the rate of wages, and if the bill on particular properties has not increased, this is probably the result of labour-saving appliances, which have themselves cost money. Allowing that the wages have increased like the rent, this would be another 5 million pounds to the farmers debit as compared with 1867-69.

"'4. I have to suggest, moreover, a more important adverse influence, the fall in the prices of agricultural produce which has occurred. On the imports, as we have seen, the fall in price between 1867-69 and 1878-80, judging by the average price of the increased amounts imported, seems to have averaged about 15 per cent., and between 1872-74 and 1878-80 about 10 per cent. Allowing for an equal fall in the produce sold off the farm, which I estimate roughly at 200 million pounds out of a total of 270 million pounds produced, the difference to the farmer in the last three years would have been 30 million pounds annually as compared with 1867-69, and 20 million pounds annually as compared with 1872-74. It appears, however, that the composition of the home production is not the same as that of the imports, grain being about half the latter and less than a third of the former, and the fall in grain having been greater than the fall in other articles; but allowing for this, we have still to reckon a great fall in price. I submit the following calculation as to the effect between 1872-74 and 1878-80:—

	Average Fall, 1872-74 to 1878-80.	Amount of Home Production.*	Reduction Due to Price.
	Per cnt.	£	£
Cereals	15	87,000,000	13,000,000
Butter and cheese	10	13,500,000	1,300,000
Total	—	—	14,300,000

* Mr. Caird's estimate.

"'As regards meat, there is hardly any fall of price to be discerned between the average of 1872-74 and the average of 1878-80: but in 1879-80 there is an obvious fall as compared with 1873-74 and even later years, in beef, if not in mutton and pork, amounting to about 5 per cent.; and this would be another item of about 2 million pounds to the debit of the farming interest in those years:—

Prices of Beasts, 1873-74 *and* 1879-80.

	1873-74.	1879-80.	Fall.	
			Amount.	Per Cent.
	s. d.	*s. d.*	*d.*	
Inferior	4 7½	4 4½	3	5½
Second class	5 2	4 10½	3½	6½
Third „	5 8	5 4¾	3¼	5
Fourth „	6 1	5 6½	6½	9
			Rise.	Rise.
Calves, coarse	4 10½	5 5	6½	13
„ small, prime	5 10	5 11½	1½	2

"'The average decline of price shown by this table, as regards the meat from cattle, including veal, may be put fairly, I think, at

5 per cent.; and as the meat from cattle is usually reckoned, I believe, about half the total from cattle, sheep and pigs together, the reduction of 5 per cent. has to be reckoned on a produce of about 43,500,000 pounds, according to Mr. Caird's estimates, and in round figures would thus amount to about 2 million pounds. This 2 million pounds would tell against the farmer in 1879-80, as compared with the *maximum* years 1873-74.

"'In addition, therefore, to the decline in production, as compared with 1867-69, the farmer in recent years has had to contend against an additional decline in production as compared with more prosperous years, with a rise in rent and wages, and with a fall in prices, the amount of all these various items to his debit being 29 million pounds to 31 million pounds. In this view, then, the other causes of agricultural depression, apart from the deficiency of harvests compared with average years, have been even more important than that deficiency. The latter appears to account for about a third of the sum which is to the farmer's debit, as compared with a recent period, the former for about two-thirds.

"'It will be convenient to bring these various estimates to a point. I have put them in a form showing what I consider to be the average as compared with the *maximum* limit:—

Estimate of Items to the Annual Debit of the Farming Interest in Recent Years as compared with 1872-74.

	Average.	Maximum.
	£	£
Decline in production compared with 1867-79	14,000,000	14,000,000
Additional production compared with 1872-74	—	5,000,000
Rise in rents 1868-77	5,000,000	5,000,000
„ wages	5,000,000	5,000,000
Fall in price between 1872-74 to 1878-80	14,000,000	14,000,000
Additional fall in price in 1879-80 compared with 1873-74	—	2,000,000
Total	38,000,000	45,000,000

"'As compared with a recent average, there is a debit to the farmer of about 38 million pounds a year, increased by comparison with years like 1872-74 to about 45 million pounds, and further increased in two years at least of the period under review, when compared with the *maximum* years 1873-74, by about 2 million pounds additional. A sum of 40 million pounds only for each of the last four years, and without taking into account previous years of depression, would come to 160 million pounds, of which, according to the above data, about 56 million pounds would be due to the deficiency of the harvests and the remainder to other causes.

"'How far these estimates would account for all the facts of agricultural depression I do not pretend to say, but if at all near the mark they would at least account for a great deal of depression, while they are also consistent with the apparent deduction from the statistics of imports, that the amount of the deficiency of agri-

cultural production due to bad harvests has not been the sole element, or even the main element, in the depression. It may be recollected, as a further means of reconciling the facts, that we have been only dealing with averages, and the depression would, of course, be specially severe in particular districts. The extremes composing the average might and probably would be very wide.

"'Assuming, then, for the present that this deficiency is about what has been described, not only may we deduce from it the conclusion already drawn as to the stability of English agriculture as far as produce is concerned, but an explanation of the ease with which the depression itself has been surmounted by the country as a whole. The deficiency which the community has had to pay for in the last three or four years has only cost about 14 million pounds a year, and at any rate can hardly have cost more than 18 million pounds a year. These are not formidable sums by themselves to the people of the United Kingdom, whose income may be reckoned at 1,200 million pounds a year. The sum of 18 million pounds is only $1\frac{1}{2}$ per cent. of this income. The net loss, moreover, cannot have been so great as this, as a large part of the cost of the food imported consists of freights earned by British capital and labour being more fully employed in other forms; but it is hardly necessary to dwell on this point. What seems more important is that the loss to the community through the deficiency has been more than made up by the operation on the imports of one of the other causes which have probably contributed to the agricultural depression, viz., the fall in prices. The fall, as we have seen, as far as the imports are concerned, appears to have amounted in 1878-80 to about 15 per cent. as compared with 1867-69, and to about 10 per cent. as compared with 1872-74; and on average annual imports of the last three years amounting to 133 million pounds these differences would be large. The sum we should have had to pay for these imports at the prices of 1867-69 would have been about 156 million pounds annually, and at the prices of 1872-74 about 148 millions annually; so that by paying only 133 million pounds, we have saved in the one case about 23 millions and in the other 15 million pounds a year. In any case, the saving to the community by the fall in prices, speaking roughly, must have helped to compensate the loss arising on the above showing from the deficiency in the harvests.

"'This last consideration brings me to the point at which I propose to conclude. This is the great importance to the community of the price of agricultural products. Our imports are rapidly growing in importance, and represent already, speaking broadly, about a third of the home consumption of agricultural products, the annual increase required by the increase of population being also about 4 million pounds, which is not likely to be diminished by any sudden increase in the production at home. The imports are even more important relatively to the non-agricultural portion of the community than the above figures represent, that portion deriving its supply of agricultural products in the proportion of about 3 to 2 from home and foreign sources respectively. There is, consequently, a strong national interest in low prices for agricultural products. Each rise of 10 per cent. means the payment annually

of 14 million pounds more to foreign countries than we should otherwise have to pay. Low prices are, no doubt, injurious to the home agricultural interests, but the gain to these interests by higher prices would be at the expense of the rest of the community, who would lose not merely what they pay to the home farmer, but the additional sum they would have to pay to foreign countries. It is,

1.—*Statement showing the Value of the Imports of the Undermentioned Articles into "Agricultural*

	1867.	1868.	1869.	1870.	1871.	1872.
	£	£	£	£	£	£
Imports in Group I. Live cattle, &c.	4,148,409	2,698,511	5,299,193	4,655,043	5,663,150	4,394,850
Imports in Group II. Meat, fish, &c.	13,386,320	14,166,161	16,549,205	16,190,926	18,564,425	19,349,170
Imports in Group III. Wheat and wheat flour	28,504,673	24,901,430	23,308,697	19,647,778	26,816,891	30,256,824
Imports in Group IV. Barley and other grain, &c. (deducting spices and sugar)..	15,420,618	18,133,505	17,569,867	17,330,789	18,784,361	25,140,616
Vegetables, chiefly potatoes—part of Group VI	676,330	799,132	737,851	752,721	535,563	1,971,512
	62,136,350	60,698,739	63,464,813	58,577,257	70,364,390	81,112,972
Add imports of wool (sheep and lambs'), less exports*	*8,572,025	7,699,975	6,637,119	9,214,125	9,013,304	8,094,742
Imports of manures	2,497,399	2,436,918	3,210,332	4,145,838	2,860,204	2,264,594
„ feeding stuffs	5,648,643	7,658,157	6,767,992	7,127,546	7,656,330	7,917,454
Total	78,854,417	78,493,789	80,080,256	79,061,766	89,894,223	99,389,762

* From "Annual

2A.—*Average Annual Imports of the Undermentioned Articles into the United Kingdom in the Years* 1867-69, 1872-74, *and* 1878-80, *compared, showing the Increase in* 1872-74 *over* 1867-69, *and in* 1878-80 *over* 1872-74.

Articles.	Average of 1867 to 1869.	Average of 1872 to 1874.	Increase of 1872-74 over 1867-69.	Average of 1878 to 1880.	Increase of 1878-80 over 1872-74.
Live cattle—					
Oxen, bulls, and cows No.	154,000	151,000	−3,000	262,000	111,000
Calves „	24,000	38,000	14,000	35,000	−3,000
Sheep and lambs „	530,000	807,000	277,000	926,000	199,000
Swine „	50,000	71,000	21,000	53,000	−18,000
Meat—					
Beef, salted or fresh cwt.	240,000	250,000	10,000	853,000	603,000
Pork „ „	164,000	277,000	113,000	413,000	136,000
Bacon and hams „	638,000	2,510,000	1,872,000	4,849,000	2,339,000
Unenumerated—					
Salted or fresh „	62,000	85,000	23,000	149,000	64,000
Otherwise preserved „	26,000	292,000	266,000	555,000	263,000
Total meat	1,130,000	3,414,000	2,284,000	6,819,000	3,405,000

therefore, to be hoped, in the interests of the community as a whole, that means may be found of removing or mitigating the agricultural depression itself consistently with low prices.

"'I remain, dear Sir, yours faithfully,

"'R. GIFFEN.

"'Board of Trade, 8th December.'"

the United Kingdom in each Year from 1867 *to* 1880 *inclusive, as given in the Returns."*

1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
£	£	£	£	£	£	£	£
5,418,584	5,265,041	7,326,288	7,260,119	6,012,564	7,453,309	7,075,386	10,239,295
24,384,319	26,326,933	28,039,220	31,447,611	31,227,346	33,983,462	33,645,153	39,838,081
34,388,598	30,922,008	32,380,726	27,919,526	40,694,419	34,217,641	39,970,120	39,327,820
21,176,246	24,362,646	24,495,950	27,535,028	27,009,829	28,893,266	25,567,622	28,250,003
2,526,503	1,454,020	1,524,416	2,291,370	3,000,998	3,064,752	3,485,361	3,751,101
87,894,250	88,330,648	93,766,600	96,453,654	108,035,156	107,612,430	109,743,642	121,406,300
9,473,130	9,393,884	9,853,547	11,146,077	11,670,119	10,010,953	8,180,416	10,616,964
2,858,638	2,292,415	2,423,305	3,363,678	2,993,352	3,109,186	1,711,677	1,783,642
7,729,342	8,358,664	9,435,696	9,574,545	9,149,419	8,745,496	7,931,273	8,628,772
107,955,860	108,375,611	115,479,148	120,537,954	131,848,046	129,478,065	127,567,008	142,435,678

Statement of Trade."

2A.—*Average Annual Imports of the Undermentioned Articles—Contd.*

Articles.	Average of 1867 to 1869.	Average of 1872 to 1874.	Increase of 1872-74 over 1867-69.	Average of 1878 to 1880.	Increase of 1878-80 over 1872-74.
Eggs .....mlns.	408	624	216	766	142
Lard ..... cwt.	247,000	526,000	279,000	892,000	366,000
Butter ..... ,,	1,166,000	1,346,000	180,000	2,056,000	710,000
Cheese ..... ,,	919,000	1,300,000	381,000	1,845,000	545,000
Corn and flour—					
Wheat .....mlns. of cwts.	35·0	42·2	7·2	54·9	12·7
Barley ..... ,,	7·1	11·9	4·8	12·5	0·6
Oats ..... ,,	8·5	11·6	3·1	13·4	1·8
Indian corn ,,	12·6	20·4	7·8	38·3	17·9
Other kinds ,,	3·8	4·5	0·7	4·5	0·0
Flour of wheat ,,	4·0	5·6	1·6	9·7	4·1
Other kinds of flour .. ,,	0·0	0·0	0·0	0·8	0·8
Total, corn and flour	71·0	96·2	25·2	134·1	37·9
Rice .....mlns. of cwts.	4·3	6·9	2·6	7·0	0·1
Potatoes ..... ,,	1·7	5·8	4·1	9·3	3·5
Onions .....mlns. of bshls.	0·8	1·1	0·3	2·1	1·0
Wool..... ,, lbs.	133·9	179·7	45·8	186·8	7·1

2B.—*Statement showing the Value of the Increase of the Imports of the Undermentioned Articles between* 1867-69 *and* 1872-74 *at the Average Prices of* 1867-69, *and* 1872-74, *and the Value of the Increase of the same Articles between* 1872-74 *and* 1878-80 *at the Average Prices of* 1867-69, 1872-74, *and* 1878-80.

Articles.	Increase between 1867-69 and 1872-74.			Increase between 1872-74 and 1878-80.			
	Quantity.	Value.		Quantity.	Value.		
		At Prices of 1867-69.	At Prices of 1872-74.		At Prices of 1867-69.	At Prices of 1872-74.	At Prices of 1878-80.
Live Cattle—	No.	£	£	No.	£	£	£
Oxen, bulls, and cows	− 3,000	− 56,000	− 59,000	111,000	2,077,000	2,202,000	2,462,000
Calves	14,000	66,000	61,000	− 3,000	− 14,000	− 13,000	− 14,000
Sheep and lambs	277,000	483,000	584,000	119,000	199,000	251,000	287,000
Swine	21,000	69,000	78,000	− 18,000	− 59,000	− 87,000	− 63,000
Meat—	Cwts.			Cwts.			
Beef, salted or fresh	10,000	22,000	19,000	603,000	1,327,000	1,172,000	1,445,000
Pork „	113,000	297,000	243,000	138,000	358,000	293,000	224,000
Bacon and hams	1,872,000	5,409,000	4,060,000	2,339,000	6,821,000	5,377,000	4,704,000
Unenumerated—							
Salted or fresh	23,000	64,000	61,000	64,000	179,000	171,000	186,000
Otherwise preserved	266,000	811,000	742,000	263,000	802,000	734,000	778,000
Total meat	2,284,000	6,603,000	5,125,000	3,405,000	9,487,000	7,747,000	7,337,000
	Mlns.			Mlns.			
Eggs	216	552,000	754,000	142	363,000	496,000	435,000
	Cwts.			Cwts.			
Lard	279,000	873,000	636,000	366,000	1,145,000	834,000	690,000
Butter	180,000	985,000	979,000	710,000	3,884,000	3,862,000	3,749,000
Cheese	381,000	1,132,000	1,128,000	545,000	1,619,000	1,613,000	1,368,000
	Mlns.			Mlns.			
Corn and Flour—	of cwts.			of cwts.			
Wheat	7·2	4,594,000	4,511,000	12·7	8,103,000	7,957,000	6,909,000
Barley	4·8	2,282,000	2,100,000	0·6	285,000	263,000	247,000
Oats	3·1	1,404,000	1,257,000	1·8	815,000	730,000	629,000
Indian corn	7·8	3,136,000	2,941,000	17·9	7,196,000	6,748,000	5,209,000
Other kinds	0·7	316,000	303,000	0·0	—	—	—
Flour of wheat	1·6	1,385,000	1,485,000	4·1	3,549,000	3,805,000	3,395,000
Other kinds of flour	0·0	—	—	0·8	474,000	614,000	490,000
Total corn and flour	25·2	13,117,000	12,597,000	37·9	20,422,000	20,117,000	16,879,000
Rice .....mlns. of cwts.	2·6	1,629,000	1,310,000	0·1	63,000	50,000	50,000
Potatoes .. „	4·1	1,041,000	1,115,000	3·5	889,000	952,000	996,000
Onions ....mlns. of bshls.	0·3	78,000	66,000	1·0	260,000	220,000	220,000
Wool..... mlns. of lbs.	45·8	2,838,000	2,798,000	7·1	440,000	434,000	406,000
Total value	—	29,390,000	27,172,000	—	40,775,000	38,698,000	34,802,000

IV.—*Agricultural Decline.*

The following is taken from the *Times* of 19th April, 1882:—

"Writing from a home county, a correspondent says, 'There are in our immediate neighbourhood twenty-two farms of various sizes, from 50 acres to 500, which have not 22 sheep on the whole of them. You know the class of soils and whether they require sheep for successful cultivation.' It is a sheep district of loamy land, good for wheat as well as turnips, and has been farmed for generations on very nearly the four-course shift, with flocks folded on roots and clovers as a distinguishing feature in the management. But sheep no longer exist in the numbers requisite for the appropriate husbandry. Not because another system has been adopted; for the absence of sheep has not been compensated for by any material addition to the head of cattle, and it is quite impossible that the farmer can have profitably exchanged breeding and grazing for the cultivation of corn. The explanation of the case is that the remnant of live stock represents the wasted condition of the capital left to the tenants. At a time when all business considerations press for an increase of meat production in preference to an extension of corn-cropping, those farmers are compelled to curtail and almost relinquish the breeding or fattening of animals, notwithstanding that sheep are selling for 1*s.* per pound in their wool. The questions arise, to what extent is this prostration of husbandry typical of a general degradation of farmers' resources? and has the process of depletion begun only in the last few seasons, or, on the other hand, been operative for a decade or more?

"Some light on the course of agriculture in different parts of the country, with reference to these queries, will reward a little labour at the figures of the agricultural returns. Comparing the stock of sheep in 1881 with that of 1868, which was the third year of collecting the information, and probably afforded a more correct statement than either 1866 or 1867, we obtain the following view of the loss during that period of thirteen years. The June census last year found in Cheshire only about one-third the number of sheep, and in Warwickshire, Worcestershire, and Buckinghamshire half the number, that existed there thirteen years ago. From somewhat over half up to two-thirds of the old flock appears now in the counties of Leicester, Stafford, Monmouth, Hereford, Surrey, Middlesex, Hertford, Nottingham, Oxford, Somerset, Salop, and Gloucester. As each county comprises both upland and lowland, and light as well as heavy soils, it is evident that parts of counties would show a still greater impoverishment of the flocks if returns were forthcoming from individual parishes or union districts. Norfolk, Northamptonshire, Berkshire, Derbyshire, Bedfordshire, Rutland, the West Riding of Yorkshire, Suffolk, and Hampshire have from two-thirds to three-fourths of their former sheep stock. More than three-fourths of the old number appear in the counties of Wilts, Devon, Dorset, Cambridge, Huntingdon, Lincoln, the

East and North Ridings of York, Sussex, Kent, Durham, Lancaster, Northumberland, Westmoreland, Cumberland, and Cornwall. But there is no county without a diminution. In England we have not three-fourths as many sheep as we possessed in 1868; the decrease being 5,548,000. The loss for Wales is 201,000 sheep, or $7\frac{1}{2}$ per cent.; for Scotland 381,000, or $5\frac{1}{3}$ per cent.; for Great Britain, the reduction is 6,130,000, or about 20 per cent.; for Ireland, 1,564,000, or $32\frac{1}{2}$ per cent.; and for the United Kingdom, a loss of 7,712,000, sheep, or $21\frac{2}{3}$ per cent. To show in what proportion this great decrease in the sheep stock was counterbalanced by an augmentation of the cattle stock, we give the numbers and percentages of increase alongside the figures for sheep in the first table. It will be seen that there has been no such thing as a replacement of diminished flocks by a proportionate increase in herds. Those provinces which have lost most sheep do not show the largest accession of cattle; neither do those with smallest loss of sheep show the least increase of cattle. Hampshire, Rutland, Bedfordshire, Essex, which added most largely to their cattle stock, are by no means the greatest delinquents in sheep; Cheshire, Warwickshire, and Buckinghamshire, the heaviest sufferers in sheep, have swelled their herds by about average amounts of 11 to 13 per cent.; Leicestershire, losing half its total flock, has increased its cattle by only 5 per cent.; Hampshire and Lincolnshire have augmented the number of their cattle in about the same ratio as they have diminished the number of their sheep; and only in Westmoreland, Cumberland, and Cornwall we see a growth of the herd greater than the lessening of the flock. For England, while sheep diminished in the thirteen years $26\frac{1}{2}$ per cent., cattle increased 10 per cent.; in Wales the increase in cattle has been $10\frac{3}{4}$ per cent.; in Scotland, $4\frac{1}{4}$ per cent.; for Great Britain, 9 per cent.; for Ireland $9\frac{1}{4}$ per cent.; and for the United Kingdom, 9 per cent. In examining the tables it should be remembered that, as figures below thousands are not given, the totals differ slightly from what would be obtained by addition of the exact amounts.

"In order to understand the true deficit in our standing head of live stock, it is necessary to compare the combined cattle and sheep stock of 1881 with that of 1868; and seeing that the relative proportions of the two kinds of stock were not the same in both years, and that a bullock is worth several sheep, we can institute a fair comparison only by bringing the two to one term, or in other words reckoning cattle as sheep. In the second table this is done, taking each head of cattle as equivalent to six sheep:—

TABLE I.

County.	Decrease in Number of Sheep in the Thirteen Years 1868-81.	Decrease of Sheep per Cent.	Increase in Number of Cattle in the same Period.	Increase of Cattle per Cent.
Cheshire	125,000	63·13	15,000	11·19
Warwickshire	227,000	52·18	9,000	10·84
Buckinghamshire	180,000	50·42	8,000	13·03
Worcestershire	138,000	50·00	10,000	16·39
Leicestershire	215,000	44·97	6,000	5·08
Staffordshire	151,000	44·53	7,000	5·60
Monmouthshire	88,000	42·92	5,000	13·15
Herefordshire	160,000	42·10	6,000	8·45
Surrey	52,000	40·62	5,000	12·50
Middlesex	19,000	40·42	3,000	13·63
Nottinghamshire	134,000	38·28	4,000	5·47
Oxfordshire	151,000	37·56	3,000	6·38
Somersetshire	293,000	37·23	27,000	14·67
Shropshire	189,000	36·41	14,000	11·57
Hertfordshire	81,000	36·32	4,000	14·81
Gloucestershire	177,000	35·04	5,000	4·71
Essex	169,000	33·93	12,000	17·91
Norfolk	287,000	33·10	10,000	9·61
Northamptonshire	193,000	32·27	12,000	12·00
Berkshire	113,000	31·92	2,000	6·06
Derbyshire	89,000	31·78	7,000	5·26
Bedfordshire	58,000	29·29	5,000	18·51
Rutland	33,000	29·20	3,000	21·42
Yorkshire, West Riding	232,000	28·18	7,000	3·01
Suffolk	163,000	27·95	5,000	8·47
Hampshire	168,000	25·53	14,000	26·41
Wiltshire	183,000	23·28	6,000	7·40
Cambridgeshire	80,000	22·98	5,000	12·82
Devonshire	213,000	22·23	30,000	14·77
Dorsetshire	114,000	20·99	10,000	14·91
Yorkshire, East Riding	117,000	19·73	5,000	6·49
Lincolnshire	309,000	18·78	28,000	15·38
Huntingdonshire	31,000	18·56	3,000	12·50
Yorkshire, North Riding	122,000	16·31	8,000	5·12
Sussex	95,000	15·77	6,000	6·38
Kent	171,000	15·22	6,000	8·95
Durham	30,000	13·63	4,000	6·66
Lancashire	42,000	12·88	12,000	5·68
Westmoreland	24,000	6·97	7,000	12·96
Northumberland	60,000	6·35	4,000	4·49
Cumberland	31,000	6·01	14,000	11·86
Cornwall	23,000	5·25	22,000	15·17
England	5,548,000	26·50	380,000	10·00
Wales	201,000	7·53	62,000	10·45
Scotland	381,000	5·35	45,000	4·28
Great Britain	6,130,000	19·96	488,000	8·99
Ireland	1,564,000	32·43	334,000	9·22
United Kingdom (including islands)	7,712,000	21·65	822,000	9·04

TABLE II.

County.	Number of Sheep and Cattle reckoned as Sheep (each Head of Cattle = Six Head of Sheep).		Decrease in Thirteen Years.	Decrease per Cent.	Money Loss at 2*l.* 10*s.* per Head.
	1868.	1881.			
Oxfordshire	684,000	551,000	133,000	19·44	£332,000
Warwickshire	933,000	760,000	173,000	18·54	432,000
Buckinghamshire	717,000	585,000	132,000	18·41	325,000
Berkshire	552,000	451,000	101,000	18·29	252,000
Herefordshire	806,000	682,000	124,000	15·38	310,000
Norfolk	1,491,000	1,264,000	227,000	15·22	567,000
Leicestershire	1,186,000	1,007,000	179,000	15·09	447,000
Hertfordshire	385,000	328,000	57,000	14·80	142,000
Suffolk	937,000	804,000	133,000	14·19	332,000
Nottinghamshire	788,000	678,000	110,000	13·95	275,000
Worcestershire	582,000	504,000	78,000	13·40	195,000
Monmouthshire	433,000	375,000	58,000	13·39	145,000
Gloucestershire	1,141,000	994,000	147,000	12·88	367,000
Wiltshire	1,272,000	1,125,000	147,000	11·55	367,000
Essex	900,000	803,000	97,000	10·77	242,000
Northamptonshire	1,198,000	1,077,000	121,000	10·10	302,000
Staffordshire	1,116,000	1,007,000	109,000	9·76	272,000
Kent	1,525,000	1,390,000	135,000	8·85	337,000
Hampshire	976,000	892,000	84,000	8·60	210,000
Cambridgeshire	582,000	532,000	50,000	8·59	125,000
Yorkshire, West Riding	2,215,000	2,025,000	190,000	8·57	475,000
Shropshire	1,245,000	1,140,000	105,000	8·44	262,000
Yorkshire, East Riding	1,055,000	988,000	87,000	8·24	217,000
Bedfordshire	360,000	332,000	28,000	7·77	70,000
Rutland	197,000	182,000	15,000	7·61	37,000
Somersetshire	1,891,000	1,760,000	131,000	6·92	327,000
Surrey	368,000	346,000	22,000	5·97	55,000
Dorsetshire	945,000	891,000	54,000	5·71	135,000
Lincolnshire	2,737,000	2,596,000	141,000	5·15	352,500
Sussex	1,166,000	1,107,000	59,000	5·06	147,000
Derbyshire	1,036,000	989,000	47,000	4·53	117,000
Yorkshire, North Riding	1,636,000	1,562,000	74,000	4·52	180,000
Huntingdonshire	311,000	298,000	13,000	4·14	32,000
Cheshire	1,002,000	967,000	35,000	3·49	87,000
Westmoreland	668,000	686,000	18,000	2·69	45,000
Northumberland	1,478,000	1,442,000	36,000	2·43	90,000
Devonshire	2,176,000	2,143,000	33,000	1·51	82,000
Durham	580,000	574,000	6,000	1·03	15,000
Middlesex	179,000	178,000	1,000	0·55	2,000
Lancashire	1,592,000	1,622,000	+30,000	+1·88	+75,000
Cumberland	1,223,000	1,276,000	+53,000	+4·33	+132,000
Cornwall	1,308,000	1,417,000	+109,000	+8·33	+272,000
England	43,611,000	40,343,000	3,268,000	7·49	8,170,000
Wales	6,226,000	6,397,000	+171,000	+2·74	+427,000
Scotland	13,418,000	13,307,000	111,000	0·82	277,000
Great Britain	63,255,000	60,053,000	3,202,000	5·06	8,005,000
Ireland	26,542,000	26,982,000	+440,000	+1·65	+1,100,000
United Kingdom (including islands)	90,106,000	87,326,000	2,780,000	3·08	£6,950,000

"Here it appears that the total combined cattle and sheep stock of England in 1881 is less than that of 1868 by a head of live stock equivalent to 3,268,000 sheep; being a reduction of $7\frac{1}{2}$ per cent. Put at 2*l.* 10*s.* per sheep, the money loss is 8,170,000*l.*; and this may be taken as near the amount of farmers' capital in sheep and cattle alone which has been obliterated in the period of thirteen years. In Wales there has been an increase of $2\frac{3}{4}$ per cent., and in Scotland a decrease of under 1 per cent., making the decrease for Great Britain 5 per cent. Ireland shows an increase of $1\frac{2}{3}$ per cent., the result for the United Kingdom being a diminution of 3 per cent. This is, indeed, a sorry position at the close of thirteen years of agricultural toil and expenditure and application of improved methods in every process of husbandry, which should have greatly augmented the head of live stock as the most important portion of the visible wealth of the farmer. The severity of the loss in certain counties is very striking. In Oxfordshire, which has parted with $19\frac{1}{2}$ per cent. of its live stock, the money loss (at the rate of 2*l.* 10*s.* per sheep) is 332,000*l.*, which is 1*l.* 7*s.* per acre upon the 246,000 acres of pasture, clover, root, and green crops in the county. The counties which have gone back the most are Oxfordshire, Warwickshire, Bucks, Berks, and Hereford; next come Norfolk, Leicester, Herts, Suffolk, and Notts; then Worcester, Monmouth, Gloucester, and Wilts. All the English counties have less live stock than they had thirteen years ago, except Lancashire, where there has been a trifling increase of $1\frac{3}{4}$ per cent.; Cumberland, where the advance has been $4\frac{1}{3}$ per cent.; and Cornwall, where it has been $8\frac{1}{3}$ per cent.

"The truth is more lamentable from the fact that the decrease in live stock has not occurred merely upon the same, but upon a larger total area of cultivated land; and not upon a smaller extent of ground allotted to food crops, but on a greater number of acres devoted to the keeping of the reduced head of animals. This appears from Table III.

"In every county more land is now under permanent pasture, clover, grasses, green crops, and roots (*minus* potatoes) than in 1868. The addition to this green area is no less than $39\frac{3}{4}$ per cent. in Cornwall, $35\frac{1}{2}$ per cent. in Devonshire, 25 per cent. in Rutland, $22\frac{3}{4}$ per cent. in Monmouth, 21 per cent. in Sussex, $20\frac{3}{4}$ per cent. in Surrey, $20\frac{1}{4}$ per cent. in Dorset, and 20 per cent. in Cumberland. England has 2,206,000 more acres of cattle and sheep crops and grass, or an addition of $15\frac{1}{3}$ per cent.; Wales, an addition of 22 per cent.; Scotland, of 13 per cent.; Ireland, of $3\frac{1}{4}$ per cent.; making $10\frac{3}{4}$ per cent. increase for the United Kingdom. In estimating the value of these crops, we should be quite wrong if we assigned a money value per acre, and concluded that the increased acreage of $15\frac{1}{3}$ per cent. in England meant that rate of increase in total worth to the growers.

TABLE III.

County.	Acres under Permanent Pasture, Clover, Grasses, Green Crops, and Root Crops (minus Potatoes).		Acres. Increase in Thirteen Years.	Increase per Cent.
	1868.	1881.		
Oxfordshire	230,000	246,000	16,000	6·9
Warwickshire	294,000	336,000	42,000	14·2
Buckinghamshire	238,000	265,000	27,000	11·3
Berkshire	199,000	220,000	21,000	10·5
Herefordshire	280,000	326,000	46,000	16·4
Norfolk	555,000	624,000	69,000	12·4
Leicestershire	318,000	363,000	45,000	14·1
Hertfordshire	161,000	175,000	14,000	8·6
Suffolk	334,000	370,000	36,000	10·7
Nottinghamshire	246,000	276,000	30,000	12·1
Worcestershire	233,000	267,000	34,000	14·5
Monmouthshire	162,000	199,000	37,000	22·8
Gloucestershire	421,000	468,000	47,000	11·1
Wiltshire	464,000	529,000	65,000	14·0
Essex	320,000	376,000	56,000	17·5
Northamptonshire	328,000	365,000	37,000	11·2
Staffordshire	420,000	474,000	54,000	12·8
Kent	403,000	448,000	45,000	11·1
Hampshire	381,000	435,000	54,000	14·1
Cambridgeshire	174,000	200,000	26,000	14·9
Yorkshire, West Riding	823,000	915,000	92,000	11·1
Shropshire	465,000	528,000	63,000	13·5
Yorkshire, East Riding	332,000	365,000	33,000	9·9
Bedfordshire	113,000	127,000	14,000	12·3
Rutland	48,000	60,000	12,000	25·0
Somersetshire	601,000	707,000	106,000	17·6
Surrey	159,000	192,000	33,000	20·7
Dorsetshire	311,000	374,000	63,000	20·2
Lincolnshire	724,000	806,000	82,000	11·3
Sussex	368,000	445,000	77,000	20·9
Derbyshire	387,000	438,000	51,000	13·1
Yorkshire, North Riding	514,000	590,000	76,000	14·7
Huntingdonshire	81,000	93,000	12,000	14·8
Cheshire	371,000	429,000	58,000	15·6
Westmoreland	193,000	226,000	33,000	17·0
Northumberland	484,000	551,000	67,000	13·8
Devonshire	618,000	838,000	220,000	35·5
Durham	256,000	300,000	44,000	17·1
Middlesex	85,000	96,000	11,000	12·9
Lancashire	561,000	640,000	79,000	14·0
Cumberland	383,000	460,000	77,000	20·1
Cornwall	284,000	394,000	113,000	39·7
England	14,333,000	16,539,000	2,206,000	15·3
Wales	1,824,000	2,228,000	404,000	22·1
Scotland	2,783,000	3,149,000	366,000	13·1
Great Britain	18,941,000	21,916,000	2,975,000	15·7
Ireland	12,117,000	12,505,000	388,000	3·2
United Kingdom (including islands)	31,135,000	34,512,000	3,377,000	10·8

"Grass and feeding crops (with the exception of a small proportion of the hay, roots, &c., sold to supply non-agricultural horses) are realised in the form of animal produce, and their value is roughly measured by the number of animals (reduced to a common term in sheep, for comparison) which they feed. So that, instead of the greater acreage in 1881 showing an accession of wealth, which it would have done had it kept a larger head of stock, it merely represents so much extra expenditure in all the costs of cultivation; and this to feed, not the same, but a reduced head of live stock. The loss by the excessive growth of food in proportion to the number of animals has not been in the costly culture of roots and other green crops, such as vetches and cabbages; for the area in England under such cultivation was 2,258,000 acres in 1868, and 334,000 in 1881. Wales had 81,000 acres in 1868, and 82,000 acres in 1881; Scotland had 505,000 acres in 1868, and 515,000 acres in 1881; and Ireland had 421,000 acres in 1868, and 415,000 acres in 1881. The increase of clover, sainfoin, and grasses under rotation has been greater. England had 2,371,000 acres in 1868, and 2,549,000 in 1881; Wales, 328,000 acres in the former year, 331,000 in the latter; Scotland, 1,261,000 acres in 1868, and 1,462,000 in 1881; and Ireland, 1,692,000 acres in 1868, and 1,998,000 in 1881. The main increase, however, has been in permanent pasture. In England there has been an addition of 1,952,000 acres, or 20 per cent. in the thirteen years; in Wales, an addition of 400,000 acres, or 28 per cent.; in Scotland, an addition of 155,000 acres, or 15 per cent.; and in Ireland an addition of 88,000 acres, or 0·87 per cent. The comparison is not very exact, owing to some confusion in the earlier returns between permanent grass and grass broken up in rotation; but it is probably near enough for our present purpose. A part of the new area of pasture has come from expensive reclamations and inclosures, and part from the process of laying down arable land to grass, which is not so costly in execution as it is burdensome by its long postponement of return for the outlay. While this extension of area for the maintenance of more cattle and sheep has been going on, the animals simultaneously falling off in number, the farmers have been abandoning a large breadth of their area of corn. As compared with 1868, England has given up the growth of 539,000 acres of grain crops, or a decrease of 7 per cent.; Wales has 66,000 acres less, or 12 per cent.; Scotland has a small increase, namely, 19,000 acres, or $1\frac{1}{3}$ per cent.; and Ireland has lost 416,000 acres, being a decrease of 18 per cent. While England has probably 8 million pounds less farmers' capital in live stock, it has a further 4 million pounds less in corn crops, altogether irrespective of the falling off in yield, than it possessed fourteen years ago.

"We have to face the fact that there is now a much lighter stocking per acre of our animal food crops, as compared with thirteen years ago: and this is corrected to only a small extent by the reduced acreage of straw crops. The decrease of live stock reckoned as sheep upon each hundred acres of grass, hay, herbage, root, and fodder crops is given for each county in the following table:—

TABLE IV.

County.	Live Stock per Hundred Acres of Permanent Pasture, Clover, Grasses, Green Crops, and Roots (minus Potatoes). Head of Stock reckoned as Sheep.		Decrease in Live Stock (reckoned as Sheep) per Hundred Acres in Thirteen Years.	Decrease per Cent. in Thirteen Years.
	1868.	1881.		
Oxfordshire	297	224	73	24
Warwickshire	317	226	91	23
Buckinghamshire	301	220	81	26
Berkshire	277	205	72	22
Herefordshire	287	209	78	27
Norfolk	268	202	66	24
Leicestershire	372	277	95	25
Hertfordshire	239	189	50	20
Suffolk	280	217	63	22
Nottinghamshire	320	245	75	23
Worcestershire	249	188	61	24
Monmouthshire	267	188	79	29
Gloucestershire	271	212	59	21
Wiltshire	274	212	62	22
Essex	281	213	68	24
Northamptonshire	365	295	70	19
Staffordshire	265	212	53	20
Kent	378	310	68	18
Hampshire	256	205	51	19
Cambridgeshire	334	266	68	20
Yorkshire, West Riding	269	221	48	17
Shropshire	267	215	52	19
Yorkshire, East Riding	317	265	52	16
Bedfordshire	318	261	57	17
Rutland	410	303	107	26
Somersetshire	314	248	66	21
Surrey	231	180	51	22
Dorsetshire	303	238	65	21
Lincolnshire	378	322	56	14
Sussex	316	248	68	21
Derbyshire	267	225	42	15
Yorkshire, North Riding	318	264	54	16
Huntingdonshire	383	320	63	16
Cheshire	270	225	45	16
Westmoreland	346	303	43	12
Northumberland	305	261	44	14
Devonshire	352	255	97	27
Durham	226	198	28	12
Middlesex	210	185	25	11
Lancashire	283	253	30	10
Cumberland	319	277	42	13
Cornwall	460	359	101	21
England	304	243	61	20
Wales	341	287	54	15
Scotland	482	422	60	12
Great Britain	333	274	59	17
Ireland	219	215	4	1·8
U. K. (including islands)	289	253	36	12

"Surely it is a painful as well as startling truth that the density of stocking upon grass and forage crops in England is now 20 per cent. less than it was thirteen years ago; that in Wales it is 15 per cent. less, and in Scotland 12 per cent. less, though Ireland shows a diminution of only $\frac{1}{8}$ per cent. Not a single English county feeds as large a head of stock per 100 acres as it did. The ratio of decrease amounts to 29 per cent. in Monmouthshire, 28 per cent. in Warwickshire, 27 per cent. in Herefordshire and Devonshire, 26 per cent. in Buckinghamshire and Rutland, 25 per cent. in Leicestershire, and 24 per cent. in Oxfordshire, Norfolk, Worcestershire, and Essex; and besides these counties which have been lowered to the grazing of three sheep or cattle in place of four, all the others show reductions ranging from 22 down to 10 per cent. British farmers have received lessons enough to turn more attention to pastoral rather than cereal husbandry; the enlarged area of their grass and green crops and decrease in the breadth sown with corn prove that they have been striving to carry out the advice; and the natural result should have been seen in a substantial advance in the head of live stock—especially after thirteen years' progress in management there should be a higher feeding power per acre beside the increase in number of acres of feeding crops grown. There is no escape from the conclusion that farmers would have multiplied their head of stock had they been able to do so. Their failure may be attributed in part to the deterrent and disabling influence of frequent years of disease, in which foot-and-mouth complaint, lung disease, and rot have committed excessive havoc; and in part to a general wasting of the means of farm occupiers through other causes. If we take the head of sheep and cattle reckoned as sheep which existed in 1868 to be represented by 100, the relative numerical value of the stock in each succeeding year appears as in the following table, limited to five of the counties which have suffered most, with columns also for England, Wales, Scotland, and Ireland.

TABLE V.—*Proportional Numbers Representing the Head of Sheep and Cattle (reckoned as Sheep) in each Year*, 1868-81.

Year.	Oxfordshire.	Warwickshire.	Buckinghamshire.	Berkshire.	Norfolk.	England.	Wales.	Scotland.	Ireland.
1868	100	100	100	100	100	100	100	100	100
'69	97	94	96	96	92	96	100	97	101
'70	93	93	93	90	87	95	101	96	102
'71	86	88	85	83	85	90	100	99	105
'72	88	92	86	92	91	94	104	111	107
'73	93	99	96	90	101	101	109	105	110
'74	98	105	100	96	101	104	113	106	109
'75	100	104	98	92	92	101	109	104	108
'76	93	99	92	87	86	98	107	102	108
'77	89	95	86	87	88	96	105	101	105
'78	89	95	88	89	93	97	104	101	108
'79	91	96	94	92	87	99	108	99	107
'80	85	86	84	85	86	95	107	101	101
'81	80	81	81	80	84	92	102	99	101
Mean of 1st 7 yrs	93	96	94	92	94	97	104	102	105
„ last 7 „	89	94	89	87	88	97	106	101	105
„ „ 2 „	82	83	82	82	85	93	104	100	101

"The great drought of 1868, succeeded quickly by another hot summer in 1870, and this immediately followed by two years of great prevalence of foot-and-mouth disease, brought the herds and flocks very low, except in Wales and in Ireland, and not to such an extent in Scotland as in England. A *maximum* head of stock was attained in 1874 and 1875; then came a decline, partially recovered at the June census of 1879. But since then the fall in numbers has been rapid, sheep-rot and cattle diseases having made excessive ravages, while the last three years' failing corn crops destroyed a serious proportion of the capital which would have been otherwise available for raising animal produce. It will be observed in the table that the fall in the proportional head of stock from the mean of the first seven years 1868-74 to the mean of the last two years 1880-81, is represented in Oxfordshire as 93 to 82; in Warwickshire, 96 to 83; in Buckinghamshire, 94 to 82; in Berkshire, 92 to 82; in Norfolk, 94 to 85. For England the fall is 97 to 93; Wales maintains the rate of stocking; Scotland shows a fall of 102 to 100, and Ireland, 105 to 101.

"It may occur to many persons that improvement in the quality of our sheep and cattle may have something to do with the want of increase in their number. Maturing and marketing animals at an earlier age must have the effect of lessening the stock of old sheep enumerated at the census; or, which is the same thing, must contribute a larger supply of meated animals from the same standing head of stock. But this greater number of fat animals annually disposed of to the butcher means so many more bred. And the agricultural returns prove that fewer, instead of more, calves and lambs have been produced in the latter part of the fourteen years' period than at its commencement. Indeed, the decrease in breeding is remarkable. Thus, the crop of lambs dropped in 1881 was less than that of 1868 to the extent of 66 per cent. in Cheshire, 55 per cent. in Buckinghamshire, 54 per cent. in Warwickshire, 52 per cent. in Leicestershire, 48 per cent. in Worcestershire, and so on, down to 8 per cent. in Northumberland and a trifling increase in Cornwall. England bred 27 per cent. fewer lambs last year than it did thirteen years before; Wales, 18 per cent.; Scotland, 11 per cent.; and Ireland 28 per cent. fewer than in 1868. A simultaneous increase in the number of calves dropped is intimated by the additional number of cows and heifers in milk or in calf. This was $7\frac{3}{4}$ per cent for England, $1\frac{3}{4}$ per cent. for Wales, and 1 per cent. for Scotland, while Ireland had less by $7\frac{3}{4}$ per cent. In England the increase of 116,000 calves does not compensate for a decrease of 2,136,000 lambs; for, reckoning the former as lambs, six for one, the calves were equivalent to an addition of 696,000, against a loss of 2,136,000. The next table sets forth the smallness of the addition to the cows and heifers in comparison with the diminishing of the crop of lambs by a half or a third in many counties. In Oxfordshire, Warwickshire, Herefordshire, Monmouthshire, Leicestershire, Somersetshire, and Derbyshire, the falling off in lambs is enormous, and the increase in cows and heifers very little. Norfolk dropped 38 per cent. fewer lambs in 1881 than in 1868, yet did not increase the number of its cattle dams at all. Shropshire had 36 per cent. fewer lambs, and no increase in cows and heifers. And the counties

of Gloucester, Wilts, and Stafford have fewer lambs by 22 to 43 per cent. with a reduction of cows and heifers at the same time of 3 to 5 per cent.

TABLE VI.

County.	Decrease in Crop of Lambs in Thirteen Years, 1868-81.	Decrease per Cent.	Increase in Number of Cows and Heifers, in Milk or in Calf, in the same Period.	Increase per Cent.
Oxfordshire	68,000	40	1,000	6·2
Warwickshire	91,000	54	1,000	3·2
Buckinghamshire	74,000	55	3,000	11·5
Berkshire	45,000	34	2,000	13·3
Herefordshire	58,000	40	1,000	4·0
Norfolk	137,000	38	—	0·0
Leicestershire	90,000	52	1,000	3·0
Hertfordshire	29,000	37	1,000	9·0
Suffolk	64,000	26	—	0·0
Nottinghamshire	61,000	42	2,000	9·0
Worcestershire	49,000	48	3,000	13·0
Monmouthshire	29,000	43	1,000	6·6
Gloucestershire	68,000	34	− 2,000	−5·0
Wiltshire	69,000	22	− 2,000	−4·0
Essex	52,000	31	4,000	19·0
Northamptonshire	79,000	35	3,000	13·6
Staffordshire	63,000	43	− 2,000	−3·0
Kent	42,000	11	2,000	7·4
Hampshire	60,000	25	9,000	31·0
Cambridgeshire	22,000	18	2,000	18·1
Yorkshire, West Riding	98,000	30	11,000	11·1
Shropshire	73,000	36	0,000	0·0
Yorkshire, East Riding	63,000	25	2,000	8·6
Bedfordshire	21,000	28	2,000	22·2
Rutland	15,000	35	0,000	0·0
Somersetshire	89,000	36	6,000	6·4
Surrey	14,000	40	4,000	21·0
Dorsetshire	43,000	22	5,000	11·3
Lincolnshire	115,000	18	7,000	15·2
Sussex	31,000	14	5,000	15·5
Derbyshire	40,000	38	2,000	3·1
Yorkshire, North Riding	62,000	21	3,000	6·1
Huntingdonshire	14,000	21	1,000	16·6
Cheshire	49,000	66	11,000	13·5
Westmoreland	13,000	10	2,000	9·5
Northumberland	29,000	8	0,000	0·0
Devonshire	73,000	21	8,000	10·8
Durham	12,000	16	1,000	5·0
Middlesex	3,000	27	1,000	6·6
Lancashire	18,000	14	9,000	7·8
Cumberland	16,000	10	1,000	2·5
Cornwall	+ 7,000	+ 4	7,000	14·5
England	2,136,000	27	116,000	7·7
Wales	156,000	18	5,000	1·9
Scotland	273,000	11	4,000	1·0
Great Britain	2,566,000	23	126,000	5·8
Ireland	460,000	28	−116,000	−7·7
U. K. including islands	3,029,000	23	9,000	0·2

"Whatever causes may have operated, other than the depletion of farmers' capital, it is a melancholy position of our agriculture to be still breeding less and less of the very stock which it most needs. Yet the necessities of farmers drove them to reduce the lamb crop of England in 1881 to 5,564,000 head, which is $8\frac{2}{3}$ per cent. below the 6,199,000 in 1880, $11\frac{2}{3}$ per cent. below the 6,295,000 of 1879, and 20 per cent. below the 7,034,000 of 1878. The increase in cows and heifers is small in comparison; the number having been 1,621,000 in 1881, against 1,593,000 in 1880, 1,604,000 in 1879, and 1,568,000 in 1878, the increase for the three years being $3\frac{1}{2}$ per cent. As compared with 1878 there was a loss of 731,000 lambs, and a gain of only 53,000 calves, supposing each cow or heifer in milk or in calf in June to breed one within the year; and, computed at six lambs for one calf, the calves do not make up for half the lambs.

"It might be thought that the rate of decrease of live stock in each county probably bears some relation to the extent of pasture land as compared with arable; but examination of the statistics does not afford a confirmation of this view. As to differences apparent upon small in comparison with large holdings, the information is of considerable interest and importance. The facts available on this point are contained in two returns obtained in 1875, and again in 1880, giving the number of holdings of different sizes, the total acreage of each class of holding, and the numbers of sheep and cattle upon each class of holdings. Computing from these figures, we are able to present the comparison in the following form:

TABLE VII.

Class of Holdings.	1875.			1880.			Decrease in Head of Sheep and Cattle, reckoned as Sheep.	Decrease per Cent. in the Five Years.
	Number of Cattle in Thousands.	Number of Sheep in Thousands.	Head of Sheep and Cattle, reckoned as Sheep, in Thousands.	Number of Cattle in Thousands.	Number of Sheep in Thousands.	Head of Sheep and Cattle, reckoned as Sheep, in Thousands.		
Fifty acres and under, average size 12 acres	964	1,808	7,592	924	1,498	7,042	550,000	7·2 4·1* 17·1†
From 50 to 100 acres, average size 74 acres	699	2,126	6,320	659	1,754	5,708	612,000	9·6 5·7* 17·4†
From 100 to 300 acres, average size 174 acres	1,695	7,592	17,762	1,678	6,432	16,500	1,262,000	7·1 1·0* 15·2†
From 300 to 500 acres, average size 373 acres	563	4,039	7,417	573	3,694	7,132	285,000	3·8 + 1·7* 8·5†
From 500 to 1,000 acres, average size 663 acres	244	2,865	4,329	260	2,735	4,295	34,000	0·7 + 6·5* 4·5†
Above 1,000 acres, average size 1,272 acres.....	40	656	896	47	705	987	+91,000	+10·1 +17·5* + 7·4†
England	4,205	19,088	44,318	4,141	16,819	41,665	2,653,000	6·0 1·5* 11·8†

* Cattle. † Sheep.

"In the five years 1875 to 1880 the stock of sheep and cattle numerically valued as sheep fell 6 per cent. in England. The decrease was of greatest amount, not upon the class of smallest occupations, but upon the next class of farms, between 50 and 100 acres, of the average area of 74 acres, where it was $9\frac{2}{3}$ per cent. On the holdings under 50 acres, averaging 12 acres each, the decrease was $7\frac{1}{4}$ per cent.; on farms between 100 and 300 acres, averaging 174 acres, it was about 7 per cent.; on farms between 300 and 500 acres, averaging 373 acres, the reduction was less, or $3\frac{3}{4}$ per cent.; farms between 500 and 1,000 acres maintained their head of stock all but a loss of three-quarters per cent.; and on the large holdings, over 1,000 acres, of the average size of 1,272 acres, the live stock, instead of diminishing, largely increased, namely, by 10 per cent. Large farms are plainly favourable to preservation and development of live stock in times of agricultural depression.

"The relative decrease of cattle compared with that of sheep is less on the smallest farms than on holdings in the next class; and the loss in sheep exceeded 17 per cent. in each class. Farms between 100 and 300 acres lost 1 per cent. of their stock of cattle and $15\frac{1}{4}$ per cent. of their sheep. The medium occupations, averaging 373 acres each, show an increase in cattle of $1\frac{3}{4}$ per cent., but a decrease in sheep of $8\frac{1}{2}$ per cent. A greater increase of cattle, namely, $6\frac{1}{2}$ per cent., and a reduction in the sheep stock of $4\frac{1}{2}$ per cent. appear on farms averaging 663 acres; and on the largest class of holdings, averaging 1,272 acres each, cattle increased by the satisfactory proportion of $17\frac{1}{2}$ per cent., and sheep also about $7\frac{1}{2}$ per cent. For England the five years brought a reduction of $1\frac{1}{2}$ per cent. in the cattle stock, and $11\frac{3}{4}$ per cent. in the sheep.

"We present the above statements illustrating the decline in agricultural wealth and production, leaving to farm occupiers and their landlords to consider how far the facts constitute an indictment against their craft or only a record of its misfortunes; how far the conditions under which farming is conducted are answerable for this failure to supply the demand for cheaper food; or whether the seasons alone are to blame, and no remedial measures, either legislative, social, or commercial, need be adopted for turning the land once more towards prosperity."

V.—*Additions to the Library.*

Additions to the Library during the Quarter ended 30th June, 1882.

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JOURNAL OF THE STATISTICAL SOCIETY,

SEPTEMBER, 1882.

REPORT *of the* COUNCIL *for the* FINANCIAL YEAR *ended* 31*st December*, 1881, *and for the* SESSIONAL YEAR *ending* 27*th June*, 1882, *presented at the* FORTY-EIGHTH ANNIVERSARY MEETING *of the* STATISTICAL SOCIETY, *held at the Society's Rooms, Somerset House Terrace (King's College Entrance), Strand, London, on the* 27*th of June*, 1882.

The PRESIDENT, SIR JAMES CAIRD, K.C.B., F.R.S., *in the Chair.*

THE circular convening the meeting having been read, and the minutes of the last ordinary meeting read and confirmed, the following report was read:—

Report of the Council.

The Council have the honour to submit their forty-eighth annual report.

The result compares as follows with the average of the previous ten years:—

Particulars.	1881.	Average for the Previous Ten Years.
Number of Fellows on 31st December	807	624
Life Members included in the above	130	94
Number lost by death, withdrawal or default	45	37
New Fellows elected	44	77

Since the 1st of January last twenty-five new Fellows have been elected.

The financial condition of the Society is satisfactory, notwithstanding there was a decrease in the receipts from all sources in 1881, as compared with those for the previous year.

On comparing the receipts for 1881 in the following table, with

those of the average for the previous five years, it will be seen that satisfactory progress has been maintained in the more permanent sources of income, viz., Dividends and Annual Subscriptions, and that the decrease occurs in those sources of income that are of a more fluctuating nature, viz., Compositions, *Journal* sales, and Advertisements in *Journal*.

Receipts per	1881.	1880.	1879.	1878.	1877.	1876.	Average for the Five Years previous to 1881.
	£	£	£	£	£	£	£
Dividends	88	75	65	55	41	38	55
Annual Subscriptions	1,306	1,317	1,300	1,197	1,117	1,054	1,197
Compositions	84	273	126	294	252	168	223
Journal sales	145	202	176	169	151	159	171
Advertisements in Journal	26	35	31	17	36	19	28
Receipts from all sources	1,649	1,902	1,698	1,732	1,597	1,438	1,674

The investments of the Society at the present time are increased to 3,200*l.* of New Three per Cents, as compared with 3,000*l.* a year ago.

A comparison of the principal figures at intervals of ten years in the following table, will show the progress of the Society from an early date :—

Comparison of Condition of Society at Intervals of Ten Years, on 31st December.

Year.	Number of Fellows.	Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.
		£	£	£	£	£
1841	432	929	908	867	135	1,118
'51	400	692	660	867	371	1,212
'61	364	754	744	867	136	1,814
'71	431	880	804	1,136	125	2,186
'81	807	1,649	1,400	2,869	192	4,935

By the foregoing table it will be noticed that great progress has been made during the last decade. The following table gives the particulars for each year of that period :—

Year.	Number of Fellows.	Income.	Expenditure.	Amount Invested.	Liabilities.	Assets over Liabilities.	Year.
		£	£	£	£	£	
1872	454	1,112	806	1,322	135	2,493	1872
'73	530	1,248	1,097	1,507	135	2,643	'73
'74	588	1,377	1,491*	1,507	460	2,819	'74
'75	607	1,231	1,733*	1,207	216	2,351	'75
'76	611	1,438	1,340*	1,207	187	3,464	'76
'77	683	1,597	1,286	1,398	201	3,763	'77
'78	746	1,732	1,345	1,902	168	4,147	'78
'79	783	1,698	1,427	2,283	238	4,433	'79
'80	808	1,902	1,517†	2,572	214	4,614	'80
'81	807	1,649	1,400	2,869	192	4,935	'81

* The expenditure of these years was affected by the heavy expenses incident to moving into new premises.

† The expenditure of this year was affected by the expenses attending the alteration and redecoration of the meeting room.

The average of the annual sales of the Society's *Journal*

In the ten years	1841-50	was	£56
„	'51-60	„	83
„	'61-70	„	97
„	'71-80	„	155

The amount realised in 1881, as already shown, was 145*l.*, which is below the average of the last ten years. An amount due to this account has however since been received, which would have brought this item up to, and beyond, the average of 1871-80.

The Opening Address of the President was given on the re-assembling of the Society in November, and the papers read and the members elected at each of the monthly meetings are recorded as follows:—

Session 1881-82.

First Ordinary Meeting, Tuesday, 15th November, 1881.

The President, James Caird, Esq., C.B., F.R.S., in the Chair.

The following were elected Fellows:—

The Rev. James Johnston.	George Samuel Sykes.
H. F. B. Ansell, A.C.A.	Surgeon Major Charles Planck, M.R.C.S.
James Austin Bourdillon.	Jervoise Athelstane Baines, C.S.

The President delivered an Opening Address, on the "British "Land Question," and presented the "Howard Medal" of 1881 (with 20*l.*) to

FREDERICK POLLARD, ESQ., M.D., M.R.C.S., of Liverpool (by proxy),

for his Essay on

"The Jail Fever, from the Earliest Black Assize to the last "Recorded Outbreak in Recent Times."

Second Ordinary Meeting, Tuesday, 20th December, 1881.

DR. T. GRAHAM BALFOUR, F.R.S., Vice-President, in the Chair.

The following were elected Fellows:—

John George Bourinot, A.B.	Henry Currer Langton.
Robert George Raper.	The Hon. David G. Garraway.
A. S. Harvey.	Robert Vincent Osborne Bartlett.
John Adams Acton.	James Thomas Gale.

Mr. G. Phillips Bevan read a Paper on "The Industrial "Resources of Ireland."

Third Ordinary Meeting, Tuesday, 17th January, 1882.

The President, JAMES CAIRD, Esq., C.B., F.R.S., in the Chair.

The following were elected Fellows:—

John Jones.	Robert Wallen.
Alfred Milnes.	C. Weeding Skinner.

Professor Leone Levi read a Paper on "The Economic Progress "of Italy during the Last Twenty Years: since the Formation of "the Italian Kingdom in 1861."

Fourth Ordinary Meeting, Tuesday, 21st February, 1882.

The President, JAMES CAIRD, Esq., C.B., F.R.S., in the Chair.

The following were elected Fellows:—

Michael Wornum Beazeley.	Henry Ramie Beeton.
Arthur Edward Clarke.	Frederick Atterbury.
Ebenezer Griffiths.	Henry Thomas Worton Elliott.
William James Harris.	James Tinker.

Ernest Clarke.

Mr. J. Glover read a Paper on "The Tonnage Statistics of

"the Decade 1870-80: a Sequel to two previous Papers on the "Decades 1850-60 and 1860-70."

Fifth Ordinary Meeting, Tuesday, 21st March, 1882.

The President, JAMES CAIRD, Esq., C.B., F.R.S., in the Chair.

The following were elected Fellows:—

E. M. Young.	Robert Butchart.
P. J. Foley.	Rev. Hugh R. Collum.
T. Neville Stack.	Edward Roberts, F.R.L.S.

Mr. Robert Giffen read a Paper on "The Use of Import and "Export Statistics."

This Paper being of considerable length, and deemed of interest, it was agreed that the bye-law as regards the time to be occupied in the reading of Papers should be suspended, and the whole of the evening having been occupied in the reading of the Paper:—

It was resolved that the meeting should be adjourned to Tuesday, the 4th April, for the purpose of discussing the Paper, and the adjourned meeting, which was well attended, took place accordingly.

Sixth Ordinary Meeting, Tuesday, 18th April, 1882.

The President, JAMES CAIRD, Esq., C.B., F.R.S., in the Chair.

The following were elected Fellows:—

Arthur Fell. | Joseph Temperley.
Richard Gibbs.

Mr. Stephen Bourne read a Paper on "The National Expen- "diture upon Alcohol."

Seventh Ordinary Meeting, Tuesday, 16th May, 1882.

The President, JAMES CAIRD, Esq., C.B., F.R.S., in the Chair.

The undermentioned was elected a Fellow:—

Walter Watson.

Mr. H. C. Burdett read a Paper on "The Relative Mortality, "after Amputations, of Large and Small Hospitals, and the "Influence of the Antiseptic (Listerian) System upon such "Mortality."

Eighth Ordinary Meeting, Tuesday, 20th June, 1882.

Dr. T. Graham Balfour, F.R.S., Vice-President, in the Chair.

The undermentioned were elected Fellows:—

Thomas E. J. Spence. | Daniel Baker.

Dr. W. A. Guy read a Paper on "Two Hundred and Fifty "Years of Small Pox in London."

The Council have to express their regret that they are for the first time during the last ten years unable to report an increase in the number of Fellows. They beg very urgently to impress on all members of the Society the importance of using their best exertions towards maintaining and increasing the numerical strength of the muster roll.

The improvements effected in the Society's rooms in 1880-81 have been supplemented by alterations in the system of lighting with satisfactory results, and the evening meetings have been well attended. The opening address, delivered by the President at the first ordinary meeting, was of exceptional interest, and the importance attaching to Mr. Giffen's paper necessitated an adjournment to an extra-ordinary meeting in order to find time for adequate discussion. Mr. Glover's paper on tonnage statistics, in continuation of similar papers previously read by him before the Society, also raised a discussion in which opportunity was afforded to the advocates of free trade and fair trade respectively to state their views; while the papers of Professor Leone Levi, and of Mr. G. Phillips Bevan were valuable contributions to contemporary history. The Council venture to hope that the enumeration of the papers read during the past year sufficiently proves the continued usefulness of the Society.

Instructions were given to the Library Committee to report as to the best manner of compiling a new catalogue of the library, now containing some 11,000 volumes, and on submitting their report, they were empowered to proceed with the work: under the supervision of the Assistant-Secretary, about half the work of compilation has been completed, at an expense of about 50*l*. The Council are of opinion that the expenditure on a new catalogue will be amply justified by the increased facilities of reference to the valuable works in the possession of the Society which will thus be afforded to the Fellows.

A suggestion that the *Journal* should be published monthly instead of quarterly as at present, in order that papers on urgent

questions of the day should be more speedily placed in the hands of the Fellows and of the public, without detriment to any rights of publication that may be conceded to the authors, has been considered by the Council, and although no alteration has as yet been determined on, the question is one worthy of serious consideration, and if the change were decided on, it might be well to make it coincident with the approaching fiftieth anniversary of the foundation of the Society.

In addition to the inevitable annual retirements from the Council, Dr. Mouat has been compelled by press of official engagements to tender his resignation as member of Council and Foreign Secretary. In accepting Dr. Mouat's resignation, the Council have to express their regret at losing the services of so valued a member of their body, as well as their sense of the valuable services which have been rendered by him to the Society, not only as one of the Council, but more especially as editor of the *Journal* and Foreign Secretary, at a time when the duties of the latter post were particularly onerous. Seeing no prospect during the coming year of any international statistical congress, it has been thought that the duties of Foreign Secretary could be provisionally carried on by one of the honorary secretaries, power being thus retained to make a special appointment to the post should occasion arise.

The lamented death of Mr. William Newmarch, F.R.S., created a vacancy for the trusteeship, which Sir James Caird, K.C.B., has kindly consented to fill; the Council avail themselves of this opportunity to tender to him, on behalf of the Society, their thanks for the assiduity and courtesy which he has uniformly shown during his presidency.

In recommending a grant from the funds of the Society to the Newmarch Memorial Fund, the Council beg to express their sense of the great loss which his death has entailed on the cause of statistical research, and they venture to hope that the fund now being raised in his memory will be applied to the advancement of the sound methods of statistical inquiry on which he so strongly insisted.

The Council have much pleasure in reporting that Mr. Pochin, one of their number, has with great liberality placed 100*l.* at the disposal of the Society, for a

"Newmarch Memorial Essay,"

"*On the Extent to which Recent Legislation is in Accordance with,*
"*or Deviates from, the True Principles of Economic Science; and*
"*showing the Permanent Effects which may be expected to arise from*
"*such Legislation.*"

The Council have conveyed, on behalf of the Society, their best thanks to Mr. Pochin.

The Council observe with pleasure the satisfactory nature of the balance sheet submitted by the auditors, and regret that owing to the effects of a serious accident, Mr. J. Whitcher was prevented from joining his signature to that of the other auditors.

The Society was well represented by its Fellows at the meeting of the British Association at York, in August, 1881, and also at the meeting of the National Association for the Promotion of Social Science in October, at Dublin.

The subject for essays in competition for the Howard Medal of 1883 (with 20*l.* added) is to be—

"The best Exposition of the Experiences and Opinions of John "Howard on the Preservation and Improvement of the Health of "the Inmates of Schools, Prisons, Workhouses, Hospitals, and "other Public Institutions, as far as Health is Affected by Structural "Arrangements relating to Supplies of Air and Water, Drainage, "&c." (The candidates to be referred to the text and foot notes of Howard's two works on "Prisons" and "Lazarettos.")

The Society has to lament the death of the following members since the last anniversary meeting:—

Fellows.

Henry Downs.
E. C. L. Fitzwilliams.
William Dawburn.
(*c*) William T. Newmarch.
James Watson, F.R.G.S.
(*c*) John Finch. (*Original Member.*)
Right Hon. Sir J. M. Macleod, K.C.S.I.
Christopher Weguelin.
(*c*) Right Hon. The Earl of Airlie, K.T.
(*c*) Charles Ansell, F.R.S. (*Original Member.*)
Cecil C. Balfour.
F. S. Leslie.
Richard F. Battye, M.R.C.P.
(*c*) William John Bovill, Q.C.
(*c*) William Newmarch, F.R.S.

Honorary Members.

M. Joseph Garnier, of Paris.
M. Victor Misson, of Brussels.
E. Swarbreck Hall, M.R.C.S., of Hobart, Tasmania.

(*c*) Indicates those who on one or more occasions had served on the Council.

The following list of Fellows proposed as President, Council, and Officers of the Society for the Session 1882-83, is submitted for the consideration of the meeting:—

Council and Officers for 1882-83.

PRESIDENT.

ROBERT GIFFEN, ESQ.

COUNCIL.

Major-Gen. H. P. Babbage.*
Arthur H. Bailey, F.I.A.
T. Graham Balfour, M.D., F.R.S.
Alfred Edward Bateman.
Stephen Bourne.
Sir George Campbell, K.C.S.I., M.P.
J. Oldfield Chadwick, F.R.G.S.
Hammond Chubb, B.A.
Hyde Clarke.
Lionel Louis Cohen.*
Major Patrick George Craigie.*
Rt. Hon. the Earl of Dunraven, K.P.
Rowland Hamilton.
Alfred Spalding Harvey.*
Frederick Hendriks.
Noel A. Humphreys.
Wynnard Hooper.*
Robert Lawson.
Professor Leone Levi, LL.D.
Sir John Lubbock, Bart., M.P., F.R.S.
John B. Martin, M.A.
Richard Biddulph Martin, M.P.
Francis G. P. Neison.
Evan C. Nepean.
Robert Hogarth Patterson.
Frederick Purdy.
Sir Rawson W. Rawson, K.C.M.G., C.B.*
Sir W. Rose Robinson, K.C.S.I.
Richard Denny Urlin.*
R. Price Williams, C.E.

Those marked * are new Members of Council.

TREASURER.

Richard Biddulph Martin, M.P.

SECRETARIES.

Hammond Chubb. | John B. Martin.
A. E. Bateman.

FOREIGN SECRETARY.

John B. Martin.

The abstract of receipts and payments, and the balance sheet of assets and liabilities on 31st December, 1881, are subjoined, together with the report of the Auditors on the accounts for the year 1881:—

(I.)—Abstract *of* Receipts *and* Payments *for the* Year *ending* 31*st* December, 1881.

RECEIPTS.	£	s.	d.	PAYMENTS.	£	s.	d.
Balance in Bank, 31st December, 1880 ... £159 17 –				Rent ..... £200 – –			
Balance of Petty Cash. 20 2 11				Less sublet ..... 131 6 –			
	179	19	11		68	14	–
Dividends on 3,000*l.* New 3 per Cents	87	18	9	Salaries, Wages, and Pension	322	2	4
Subscriptions received:—				*Journal*, Printing £555 10 3			
43 Arrears ..... £90 6 –				„ Annual Index 5 5 –			
573 for the year 1881..... 1,203 6 –				„ Shorthand Reporters 18 18 –			
6 in Advance ..... 12 12 –				„ Literary Services 29 14 –			
622	1,306	4	–		609	7	3
4 Compositions	84	–	–	Advertising	55	12	10
Journal Sales	144	11	6	Ordinary Meeting Expenses	23	14	10
Advertisements in Journal	25	19	9	Library	36	14	7
				Stationery and Sundry Printing ...	64	15	5
				Postage and delivery of Journals...	63	17	7
				Fire and Lights	39	5	–
				Incidental Expenses	53	17	11
				Furniture and Repairs	39	19	9
				Howard Medal	21	10	–
					1,399	11	6
				Purchase of 300*l.* New 3 per Cents	297	7	6
					£1,696	19	–
				Balance at Drummond's ..... 130 17 –			
				Balance of Petty Cash – 17 11			
					131	14	11
Total	£1,828	13	11	Total	£1,828	13	11

(Signed) "J. O. Chadwick,
"G. Harvey Simmonds, } *Auditors.*"

(II.)—Balance Sheet *of* Assets *and* Liabilities, *on* 31*st* December, 1881.

LIABILITIES.	£ s. d.	£ s. d.
Per Accounts for—		
December number of the *Journal* ...	137 12 –	
Annual Index	5 5 –	
Miscellaneous printing	7 16 3	
Stationery, &c.	7 16 9	
Advertisement Accounts	22 19 8	
Miscellaneous (as per List).....	10 9 4	
		191 19 4
Balance in favour of the Society...		4,935 4 10
		£5,127 3 10

ASSETS.	£ s. d.	£ s. d.
Cash Balances		131 14 11
3,000*l.* New 3 per Cents, cost		2,869 8 11
Property: Estimated Value of, viz.—		
Books in Library	£1,000	
Journals in Stock	500	
Furniture and Fixtures	500	
		2,000 – –
Arrears of Subscriptions recoverable (say)		126 – –
		£5,127 3 10

(III.)—Building Fund (Established 10*th July*, 1873), Balance Sheet, *on* 31*st* December, 1881.

LIABILITIES.	£ s. d.
Amount of Fund from last Account	168 17 10
Dividends Received during 1881 ...	5 13 –
	£174 10 10

ASSETS.		£ s. d.	£ s. d.
1881.	Invested as per last Account in Metropolitan Consolidated 3½ per Cent. Stock, in the name of the Treasurer, R. B. Martin, Esq., M.P.—		
	£165 4 6 cost		168 17 10
9 Apl.	Purchased 2 10 8 „		2 15 8
		167 15 2	171 13 6
31 Dec.	Balance to be Invested ...		2 17 4
			£174 10 10

(Signed) "J. O. Chadwick,
"G. Harvey Simmonds, } *Auditors.*"

"REPORT OF THE AUDITORS FOR 1881.

"STATISTICAL SOCIETY,

"*8th May*, 1882.

"*The Auditors appointed to examine the Treasurer's Accounts of the Society for the Year* 1881,

"REPORT:—

"*That they have carefully compared the Entries in the Books with the several Vouchers for the same, from the 1st January to the 31st December*, 1881, *and find them correct, showing the Receipts (including a Balance of* 179*l.* 19*s.* 11*d. from* 1880) *to have been* 1,828*l.* 13*s.* 11*d.*, *and the Payments (including the purchase of* 300*l. New Three per Cents*), 1,696*l.* 19*s.*, *leaving a Balance in favour of the Society of* 131*l.* 14*s.* 11*d. at 31st December*, 1881.

"*They have also had laid before them an Estimate of the Assets and Liabilities of the Society at the same date, the former amounting to* 5,127*l.* 3*s.* 10*d.*, *and the latter to* 191*l.* 19*s.*, *leaving a Balance in favour of the Society of* 4,935*l.* 4*s.* 10*d.*

"*The amount standing to the credit of the Building Fund at the end of the year* 1881 *was* 174*l.* 10*s.* 10*d.*, *Metropolitan Consolidated Stock* ($3\frac{1}{2}$ *per Cents*), *invested in the name of the Treasurer, R. B. Martin, Esq., M.P.*

"*They further find that at the end of the year* 1880 *the number of Fellows on the list was* 808, *which number was diminished in the course of the year to the extent of* 45, *by Deaths, Resignations, and Defaulters, and that* 44 *new Members were elected, leaving on the list, on the 31st December*, 1881, 807 *Fellows of the Society.*

(Signed) "J. O. CHADWICK,
"G. HARVEY SIMMONDS, } *Auditors.*"

The CHAIRMAN in moving the adoption of the report said, it would be observed that it referred to the different papers read during the last session. He thought that these papers, without exception, had been of unusual interest. They had had an excellent paper by Dr. Pollard on "The Jail Fever," and by Mr. Bevan on "The Industrial Resources of Ireland"—both papers being of great interest and importance. Professor Leone Levi read a paper on "The Economic Progress of Italy during the last Twenty Years, since the Formation of the Italian Kingdom in 1861," which, referring as it did to Italy—that country of great renown—was a paper of much interest to the Society. Mr. Glover read a paper on "The Tonnage Statistics of the Decade 1870-80," which of itself was a paper of great interest and utility, and upon which there followed an excellent discussion. With regard to Mr. Giffen's great paper on "The Use of Import and Export Statistics," they were unable on the first night to take any discussion upon it: but, on the second night, he thought the opponents of Mr. Giffen would admit that though they certainly had the most of the speaking upon that occasion, he (the chairman) would not say they had the best of the argument. Then they had a paper by Mr. Bourne on "The National Expenditure upon Alcohol," which was also one of great interest and value, as was also one by Mr. Burdett on "The Relative Mortality after Amputations of Large and Small Hospitals," &c. Dr. Guy also read a paper on "Two Hundred and Fifty Years of Small Pox in London." He need scarcely say that any paper by Dr. Guy was always received by the members of the Society with great interest, both on account of its intrinsic value and the respect which they entertained for Dr. Guy himself. He was sorry that it had fallen to his lot to be President when for the first time during fifteen years there had been a falling off in the progressive number of Fellows. It was not however very serious, being only one; there was a resignation, which had been since withdrawn, and if the withdrawal had come in at the proper time, there would have been no decrease. Looking to the accounts as a whole, he thought there had been nothing very unsatisfactory in the two years during which he had held the presidency of the Society. The income of the past two years would compare favourably with that of any two previous years of the Society's existence, so that it might safely be said that the falling off in the last year was due to exceptional circumstances and not to any cessation of the interest and utility of the papers read before it. The most important thing that had occurred during the past year, and one which every member of the Society would look upon with feelings of great regret, was the lamented death of Mr. Newmarch, who was, he might say, without fear of hurting anybody's feelings, probably the leading member of the Society, and had been so for many years. As a statistician he was almost unequalled, but he was also a man of great ability, with remarkable facility of speech and capacity for argument upon any subject he undertook to advocate or defend. He was quite sure that all the members of the Society would join the Council in the expression of their sorrow for the lamented death of their distinguished member Mr. Newmarch. It would be observed from the

report that a very liberal offer had been made by Mr. Pochin, of a prize which was to be called the "Newmarch Memorial Essay," "On the Extent to which Recent Legislation is in Accordance with, or Deviates from, the True Principles of Economic Science, and showing the Permanent Effects which may be expected to arise from such Legislation." This was a very interesting and important question, and the liberal amount which had been placed at the disposal of the Society would, he trusted, enable them to elicit something worthy of the Society and of the subject. He begged to move "That the Report of the Council, the Abstract of Receipts and Payments, the Balance Sheet of Assets and Liabilities, and the Report of the Auditors for 1881 be adopted, entered in the minutes, and printed in the *Journal*."

The motion was seconded by Dr. Balfour, and carried unanimously.

Dr. T. Graham Balfour and Mr. J. B. Kyshe were chosen as scrutineers of the ballot, and the Chairman upon their report, announced that the gentlemen named in the printed list submitted to the meeting, had been unanimously elected as the President, Council, and Officers for the ensuing year.

On the motion of the Chairman a cordial vote of thanks was given to the scrutineers.

The Chairman then announced the title of the Howard Medal Essay for 1883 to be "The best Exposition of the Experiences and Opinions of John Howard on the Preservation and Improvement of the Health of the Inmates of Schools, Prisons, Workhouses, Hospitals, and other Public Institutions, as far as Health is Affected by Structural Arrangements relating to Supplies of Air and Water, Drainage, &c."

Sir Rawson W. Rawson said he had much pleasure in proposing that Sir James Caird, K.C.B., F.R.S., be appointed a Trustee in the room of the late lamented Mr. William Newmarch, F.R.S. He would only say that if Sir James Caird displayed as much zeal and ability in forwarding the interests of the Society in his new capacity as he had done in his duties as president during the last two years, the Society would have reason to congratulate itself on the choice.

Mr. Chadwick said he was very happy to be permitted to second the resolution. Sir James Caird's two years' presidency had been marked by a degree of success which the Society had never previously attained, and his appointment as Trustee would tend to render his connection with the Society permanent.

The resolution was carried unanimously.

The Chairman in returning thanks, said he could not hope to fill in the same degree the position that Mr. Newmarch filled in the Society, but in so far as he was entrusted with any management of its securities, he hoped he would be able to fulfil that duty without difficulty.

Dr. Guy proposed "That the best thanks of the meeting be given to the retiring President, Council, and Officers for their services

during the past year." The working of the Society depended, he said, upon the joint action of the parties to whom the resolution referred, including Mr. Giffen who, he was glad to see, had been placed as their President—in the highest position which he could occupy. In performing the duty which devolved upon him, he must call attention to the loss the Society had recently sustained in the death of Mr. Newmarch. He could recall the efforts Mr. Newmarch was continually making on behalf of the Society in times past, when he (Dr. Guy) had the honour of being associated with him in the work of the Society. Mr. Newmarch, Mr. Lumley, and himself were honorary secretaries in 1860, when the International Statistical Congress was held in London. On that, and on many other occasions, he was brought into contact with Mr. Newmarch, and knew how earnestly and vigorously he devoted himself to the work of the Society. In one matter, affecting not only their own but other cognate societies, Mr. Newmarch always took an active interest. He meant the proposal that they would make a joint effort to obtain more suitable house accommodation than they had at present. He did not wish to disparage the existing accommodation of the Statistical Society. Their present site and house had many advantages, and if they could retain it for years to come, they might be perfectly content; but their tenure, they all knew, was uncertain. They were tenants of Canon Barry, Principal of King's College, and if for any reason he were to cease to be connected with the college, the Society, after six months, would cease to hold possession of the rooms, and he (Dr. Guy) looked forward with considerable apprehension to the difficulty of obtaining suitable accommodation. To show the sincerity of his conviction upon this point, he had prepared for the service of the Society a publication, the first part of which was a reprint of the paper he read some time ago on the claims of science to public recognition and support; while the second part related to the continuous efforts that had been made by Mr. Newmarch and the Society to obtain the desired accommodation, with the addition of certain plans and elevations which would add an interest to the question if it should again turn up. For his own part, he did not think it at all possible that the societies interested would ever come together and agree upon any scheme by which they could all be accommodated. It was a matter in which it was essential that some one society should take the lead, and on its own behalf and that of other allied societies, submit to the Government their joint claims for support—claims that could not be refused without ignoring the precedents of what had been done for other societies in times past. At the same time he must confess that he rather looked for help to some act of private munificence, such as that of Dr. Siemens, who some time ago placed at the disposal of the Iron and Steel Institute 10,000*l.* as a nucleus by which funds might be raised to give them better accommodation than they had at present. If any such act of munificence should be extended to their Society, they would be able to appeal to the Government with a fair prospect of success. They might remind them that "They had a great quantity of waste land at their disposal in the immediate neighbourhood of Whitehall, of the years and years that had elapsed since it first lay waste and unproductive."

He was not speaking of this Government, or of any one Government, but of successive Governments. It was sad to think how what might be termed the land resources of the country had been wasted, and money squandered in idle plans and schemes, on land purchased at a wrong time, at an enhanced price. He thought the subject ought to be brought under the serious consideration of the Government. He had again brought the subject before them in a substantial and permanent form, and he trusted that it would be kept before the world until at last they obtained that which they desired. He had much pleasure in moving the resolution.

Major Craigie in seconding the resolution, said they were all indebted to their President and Officers for the very successful Session which came to an end that day. He was sure he spoke the minds of his fellow members when he congratulated Sir James Caird on the distinction which Her Majesty had recently conferred upon him. It was a recognition of valuable services rendered and efforts made in the cause of Economic Science. He hoped that their Council and Officers in the future would serve the Society as well as the Officers in the past had done, for the due arrangement and regulation of the business of the Society had a great deal to do with its efficient working, and would materially further the cause which the members had so much at heart.

The resolution was unanimously agreed to.

The Chairman on behalf of himself, the Council, and the Officers of the Society, returned his sincere thanks for the kind manner in which approval had been expressed of their conduct of the affairs of the Society during the past year. So far as his own exertions were concerned, he had given them with all his heart, but they would have been of little benefit to the Society had it not been for the assistance he had received from the Council and Officers, who had all worked to the best of their ability in furtherance of the objects of the Society. In leaving the presidency, he was happy to know that he was to be succeeded by his friend Mr. Giffen, who was a man of eminent distinction in economic science.

Mr. W. J. Harris proposed a vote of thanks to the Chairman, and in doing so said it was a fortunate thing that in England there were so many good men that when one left, another equally good was ready to take his place.

Mr. C. Walford seconded the resolution. The Society, he said, had been fortunate in having during the past two years had a President who possessed a knowledge of the proper method of treating statistics, and a facility in transacting public business.

The resolution was unanimously agreed to.

The Chairman having thanked the meeting, announced that a fund was being formed to commemorate the distinguished services of Mr. Newmarch. The subscriptions already received were considerable, but, as Chairman of the committee entrusted with the fund, he would be pleased to receive further sums from those members of the Society who might not yet have had an opportunity of subscribing.

The meeting then terminated.

Two Hundred *and* Fifty Years *of* Small Pox *in* London.

By William A. Guy, M.B., Cantab., F.R.C.P., F.R.S., *one of the Honorary Vice-Presidents of the Statistical Society.*

[Read before the Statistical Society, 20th June, 1882.]

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The limited time ultimately allotted to me for the preparation of this paper has caused me to restrict myself to the figures relating to small pox in London, reserving for possible future use the figures for England, which accordingly I hold in reserve. The years comprised in this survey may be roundly stated at two centuries and a half—two hundred and fifty years—or, more exactly, at the interval between 1629 and 1881, both inclusive, but with breaks presently to be pointed out and described.

It is well, perhaps, that I should show how it came to pass that I entered upon this inquiry. I did not undertake it in the spirit of controversy, but because I wished to find continuous occupation in copying and calculating for one who was eminently qualified to render me assistance in these matters, and who happened at that time to be disengaged. Hence it has come to pass that both the original figures, and the calculations based upon them, have been verified, and all sources of error in the figures on which this communication is based thus excluded, except such as are incidental to printed records copied from the manuscripts of those who furnished the returns. I must add that, when I took these figures in hand, I did not know to what conclusions they would lead me, though I

felt convinced that, whatever they proved to be, they must have some bearing (perhaps an important one) on the question of the effect, favourable or unfavourable, of inoculation, and the efficacy of vaccination as a preventive of small pox.

The sources from which my original figures, embodied in Table I of the Appendix, were derived, are:—

1. "A Collection of the Yearly Bills of Mortality, from 1657 to "1758 inclusive. Together with several other Bills of an earlier "date." [These tables are followed by four essays, of great interest to the statist and actuary, by Captain Graunt, Sir William Petty, Corbyn Morris, and J. P., Esq., all Fellows of the Royal Society. It bears date 1759, and is published by A. Millar, in the Strand.]

2. "Mortality of the Metropolis. A Statistical View of the "Number of Persons reported to have Died of each of more than "100 kinds of disease and casualties within the bills of mortality "in each of the two hundred and four years, 1629-1831," &c. "By "J. Marshall, Esq. 1832." Table I of the Appendix is compiled from the figures given in this work.

3. "The Registrar-General's Annual Summary of Births, Deaths, "and Causes of Death, in London and other cities. 1881." [Published 1882.]

4. "Observations on the Increase and Decrease of Different "Diseases, and particularly of the Plague. By William Heberden, "jun., M.D., F.R.S. 1801."

I am indebted, as I have just stated, for the figures relating to the years from 1629 to 1831 inclusive to the tables of J. Marshall; and for those from 1841 to 1881 inclusive to the "Annual Sum-"mary" of the Registrar-General, Table XI, pp. xx and xxi.

In the series of returns thus extending from the year 1629 to the year 1881 inclusive, there are certain breaks or interruptions, which I must point out, and certain changes in the grouping of diseases which I must explain.

The breaks or interruptions occur as follows:—

a. After the year 1636, a break in the bills of ten years, with a resumption of them in 1647.

b. After the year 1831, a break of nine years, with a resumption of the returns in their improved form by the registrar-general in 1838, and in their more mature form in 1841.

The changes in the grouping of diseases are the following:—

a. Small pox included in the same group with flox, as "flox and "small pox," from the year 1629 to the year 1636 inclusive, and from the year 1647 to the year 1686 inclusive.*

* In Marshall's tables the heading "Small Pox" is adopted: the mixed heading "Flox and Small Pox," and "Flox, Small Pox, and Measles" in the anonymous compilation No. I.

b. Flox, small pox, and measles comprised in one group from the year 1687 to 1701 inclusive; the cases of measles in the last year of the series being returned as four in number.

c. Small pox, as a distinct heading, and measles also distinct, from the year 1702 forwards; so that, by deducting the four cases of death by measles from the return of 1701, we obtain a continuous return of deaths by small pox from 1701 to 1831 inclusive, and again from 1841 to 1881 inclusive. Hence we can compare, if we will, the forty years 1841 to 1880, with groups of forty years in the interval 1701 to 1831, being one hundred and thirty years; and this in respect both of small pox and measles. If we would make the fourteen years from 1687 to 1700 inclusive, part of the whole return, we should have to deduct the deaths by measles as estimated, say, from an average of five years preceding and following these fourteen years.

Of the term "flox," associated with small pox in the earlier returns, I may state that I have taken great pains to ascertain its true meaning by consulting old medical dictionaries and other works in which it was likely to be employed, and have arrived at the conclusion that, whatever its precise meaning may have been, it was certainly a form of small pox. I find, for instance, in that remarkable compilation, "A general chronological history of the "air, weather, seasons, meteors, &c.," published in 1749, the "flux "sort" mentioned as a form of the disease which is never, or rarely, followed by any other form. It is added that "having flux, "or, distinct kinds," does not prevent "the spurious sorts, as "chicken pox, crystals, &c."*

It will be understood, then, that the primary object of this communication is to throw light on the great and important epidemic malady, small pox. To assist me in this inquiry I make use of the facts relating to another epidemic, measles, a disease of which the register extends over the same long period of time; and which like small pox, has outward appearances and leading symptoms easily recognised. So that in the earlier times, when the bills of mortality were compiled by the parish clerks from data supplied

* I must here acknowledge my obligations to my friend Dr. John Harley for the careful, but vain, search, he has made after the word "flox." The word "flux," as he states, is always used in reference to discharges, and he shows by the following case cited from the "Rational Physitian's Library" that "small pocks and "bloody flux" are found associated as in obs. 71 of that work. "A boy, 5 years "old, being stricken sick of the small pocks, the third day was taken with a "bloody flux, with a frequent desire of going to stool, he voided flegmatic and "snotty excrements with great store of blood. The pocks were small, white, and "flat." Dr. Harley expresses the opinion that the word "flox" used in connection with small pox, must refer to cases of this kind, which in olden times, if we are to judge by their comparative frequency now, must have been common. I could not find the word "flox" in the three volumes of the "Leechdoms."

by women searchers, assisted by the medical practitioners of their day, the true cause of death was almost as likely to be reported as in these later days, when the facts are brought together by the registrar-general acting on the certificates of medical men.

These two orders of facts are displayed in Table I of the Appendix in parallel columns with the deaths from all causes, in the same years, reported by the same agents; while two other parallel columns exhibit the ratios per thousand resulting from the comparison of the deaths from small pox and measles respectively with the deaths from all causes, accidents, and still-births included, as well as the two diseases small pox and measles themselves.

In the absence during the earlier periods of reliable data respecting population, and in the face of frequent changes in the area from which the death returns were drawn, as well as of sundry omissions of places and classes of people, I have been compelled to have recourse to the deaths from all causes as my standard of comparison. That these deaths are but rough approximations to the truth, especially in the days preceding the Registration Bill, I am well aware; but a glance at the figures themselves will convince us that the fluctuations in the deaths, both from special causes and from all causes collectively, are made plain, though wanting in exactness.*

Thus, if I take the figures which represent the deaths in London for the ten years ending 1680, 1780, and 1880 in the three centuries over which the figures extend—the seventeenth, eighteenth, and nineteenth centuries—and place them in order, each figure under that for the corresponding year, and if I further omit the last three figures of each year's return, I obtain the following series, which may be said to lend support the one to the other:—

Ten years ending 1680.....	16, 18, 17, 21, 18, 19, 19, 21, 22, 21.	Range	22 to 16.
„ 1780.....	22, 26, 22, 21, 21, 19, 23, 20, 20, 21.	„	26 „ 19.
„ 1880.....	80, 71, 75, 77, 82, 88, 77, 84, 84, 81.	„	88 „ 71.

It will be seen that the figures in the third line, being those for the present century, and for the London of our own time, are about four times as numerous as those for the city of the seventeenth and eighteenth centuries, as comprised within the bills of mortality; so that if we divide the figures of this third line by four, we obtain a series nearly resembling in general character the series in the first and second lines.

* Heberden, after noting the "mistakes and misrepresentations" to which particular diseases are liable, states that even in the smaller divisions of the subject "the correspondence of one year, and of one week with another, is such as must "convince every attentive observer that a considerable degree of credit is due to "these reports."

Again, if I take the figures for small pox for the same years in the same three centuries and treat them in the same way, but omitting the last two figures, I obtain similar fluctuations, with a striking indication (which I notice in passing) of a falling off in the supply of deaths by small pox in the century in which we are living. The figures are as follows:—

Ten years ending 1680.....	7, 11, 8, 25, 10, 4, 17, 18, 20, 7.	Range 25 to 4.
„ 1780.....	17, 40, 10, 25, 27, 17, 26, 14, 25, 9.	„ 40 „ 9.
„ 1880.....	79, 18, 1, ·57, ·46, 7, 26, 14, 4, 5.	„ 79 „ ·46.

The first two lines of this comparison show similar fluctuations, though the scale is different, while the figures of the third line exhibit an amount of fluctuation that cannot fail to attract attention. It is clear that we are here dealing in this nineteenth century with an exceptional order of facts, brought about by some very potent force or forces. How exceptional it is we shall clearly perceive if we bear in mind what has just been stated, that the figures of the third line relate to the present century, when the deaths in London from all causes are four times as numerous as in the two previous centuries.

From these needful introductory explanations I pass on to consider the lessons which may be deduced from these returns. In the first place, it is obvious that we may learn something from them of the frequency of epidemic outbreaks of small pox at different periods; also something of the maxima and minima to which the deaths from small pox have risen and fallen; also something of the intervals between the epidemics. Having exhausted this field of inquiry, we may also hope to learn something from a like survey of the facts relating to measles, and still more from a careful comparison of the results of the one survey with those of the other. This may lead to new inquiries respecting certain other epidemics, which cannot be traced throughout the whole period of two hundred and fifty years, but may still extend over periods long enough to confirm or invalidate the conclusions to which a study of the returns for small pox and measles had conducted us. I shall treat the questions here indicated under distinct headings in the order in which they occur.

Number of Small Pox Epidemics at Different Periods.

Though we all understand what an epidemic malady means, and know that it implies a considerable and irregular excess of attacks and deaths in certain years as compared with others, and though, as an example in point, we should speak of small pox as epidemic and pulmonary consumption as non-epidemic, we are not able to state with numerical precision what amount of fluctuation or difference

from year to year shall be held to constitute an epidemic, or what multiple of the average or minimum of deaths. In the absence of any numerical rule applicable to this subject, we shall not go far wrong if, passing in review the figures relating to a term of years, we lay hold of those that stand out in relief (if I may so express myself) from the figures which precede and follow. In the case of small pox, I find such convenient figures in all numbers exceeding 100, and, with a view to a comparison of one period with another, I name 100 deaths or upwards an epidemic. But it may be well to state that I attach no importance to the word "epidemic," or the precise figure which it is made to represent.

Such being the meaning I attach to the term epidemic in this special case of small pox, I proceed to show the number of such epidemics at different periods of time, and, that I may avoid all appearance of selection, I display the epidemics as they have occurred in periods of thirty and forty years, and in the three centuries to which my tables relate.

TABLE I.

Arrangement by Periods of Thirty Years.		*Arrangement by Periods of Forty Years.*	
1647–76 (Flox and small pox)	6	1647–86 (Flox and small pox)	9
1702–31	6	1702–41	8
'32–61	9	'42–81	17
'62–91	13	1801–31 (thirty years)	0
1801–30	0	'41–80	0
'41–70	0		

Arrangement by Centuries.

Seventeenth century	(forty-eight years)	10
Eighteenth „	(one hundred „)	32
Nineteenth „	(seventy-two „)	0

The three sections of this table agree in displaying the present century as free from epidemics of small pox, when the ratio of 100 to 1,000 of all causes, or 10 per cent., is taken as the measure and definition of an epidemic. They also agree in representing such epidemics as of most frequent occurrence in the latter half of the eighteenth century. For when the figures are grouped by centuries, it is seen that the forty-eight years of the seventeenth century, when doubled so as to approximate to the number of years in the eighteenth, yield about twenty epidemics to thirty-two in the eighteenth century. The entire absence of epidemics in the nineteenth century, when 100 deaths per 1,000, or 10 per cent., are taken as the mark and measure of an epidemic, is the salient and notable fact which my inquiries up to this point have established.

Lest, however, this selection of a particular ratio should be deemed arbitrary, and possibly misleading, I construct a table in

which I display side by side the numbers of years in which the ratios exceed the several figures 50, 75, 100, and 150 per 1,000.

TABLE II.

Ratios.	Centuries.		
	Seventeenth.	Eighteenth.	Nineteenth.
50 per 1,000 and less than 75	11 (48 yrs.)	22 (100 yrs.)	10 (72 yrs.)
75 „ 100	4 „	27 „	4 „
100 „ 150	10 „	29 „	0 „
150 and upwards	0 „	4 „	0 „
50 and upwards	25	82	14

These, too, are very striking figures. The eighteenth century again shows a marked excess of epidemics. For while it equals the seventeenth century when the ratio of 50 and less than 75 is taken as the measure of an epidemic, it exceeds it more than fourfold when the epidemic standard is taken at 75 and less than 100. When the standard is fixed at 100 and less than 150, the figure for the eighteenth century for the same number of years exceeds that for the seventeenth as 29 exceeds 20, while for the higher standard of 150 and upwards it displays four instances, though in the seventeenth and nineteenth centuries no single year attains this highest standard. If we add all the figures of the three columns together, the sum of 82 is more than three times the sum (25) for the seventeenth century, and (the seventy-two years of the nineteenth century being augmented by a third) the ratio for the nineteenth century proves to be less than a fourth of that for the eighteenth, and considerably less than that for the seventeenth.

Of the Maxima and Minima, and Range of the Epidemics.

If now we again assume 100 deaths by small pox in 1,000 deaths from all causes as the measure of an epidemic, it is natural to inquire what are the highest and what the lowest figures attained in the several centuries. This is shown in the next table.

TABLE III.

Centuries.	Maxima.	Minima.	Range.
Seventeenth century (48 years)	124·40	2·98	121·42
Eighteenth „ (100 „)	183·94	15·32	168·62
Nineteenth „ (72 „)	98·37	0·56	97·81

In this table, again, the range of figures for the eighteenth century largely surpasses that for the seventeenth century, and still

more considerably that for the nineteenth, in which century both the highest and the lowest figures present a striking contrast to those of the two earlier centuries.* But the small figure (0·56) or barely 1 in 2,000 deaths from all causes, does not fully represent the low rate of mortality from small pox which took place in the year 1875. For the lowest figure (2·98) of the seventeenth century occurred in the year 1666, or that which followed the Great Plague, and coincided with the Great Fire. The immense mortality from the plague, the dispersion of a large fraction of the population, and the fire that destroyed so large a portion of the city, combined to reduce the possible victims by that disease, and the deaths from small pox, to the low figure of 2·98 per 1,000; the ratio of the previous year having fallen under the influence of the first two causes to the figure of 6·73. So that the ratio of 0·56 represents for the present century a minimum mortality altogether without precedent.

The Frequency of the Epidemics of Small Pox.

Another question of interest which the returns given in Table I of the Appendix enable us to answer is the frequency of the occurrence of epidemics of small pox. If we still define an epidemic of that disease as an outbreak numbering 100 in 1,000, or 10 per cent., we obtain the results embodied in the following table. If we count the several intervals between the epidemics both for the seventeenth and eighteenth centuries (for there have been no such epidemics in the nineteenth) we get the following figures:—

TABLE IV.

Length of Interval.	Seventeenth Century.	Eighteenth Century.
	Number of Intervals.	
1	2	12
2	2	6
3	1	4
4	0	1
5	1	2
6	1	0
7	0	0
8	1	0
9	–	1
Total intervals	8 years	26 years
„ length of same	30 „	59 „
Approximate average interval	4 „	2 „

From this table then it appears that, still reckoning the epidemic of small pox at 100 in 1,000, or 10 per cent., the intervals of freedom

* The figures for the shorter periods of thirty and forty years, as well as those for the three centuries, are given in full in Table II of the Appendix.

range from one to eight years in the seventeenth century, and from one to nine years in the eighteenth century, the number of intervals having been 8 in the seventeenth, and 26 in the eighteenth, and the length of interval, or period of freedom, being a near approximation to four years in the seventeenth and two years in the eighteenth.

Here I pause for a moment to gather up the lessons taught by the three tables submitted up to this point. They teach us that while no epidemic of the standard assumed has taken place in this the nineteenth century, such epidemics were of frequent occurrence in the seventeenth and still more frequent in the eighteenth centuries; that this disparity shows itself very decidedly in such epidemics as exceeded 150 per 1,000; that the least ratio in any year of the eighteenth century did not fall nearly so low as in the century preceding and following; and that the intervals of freedom from epidemics was only half the length of those in the seventeenth century.

I may add that in three instances in the eighteenth century, but not once in the previous century, the epidemics exceeded one year in duration. The years in question were 1759 and 1760, 1762, 1763, 64, and 65, and 1774 and 1775. I append the figures for these three periods:—

1759 and 1760. 132·42, 110·28.
'62, 63, 64, and 65. 104·19, 136·98, 102·66, 107·53.
'74 and 75. 188·70, 138·10.

One more comparison it occurs to me to make. The deaths from all causes in the seventeenth, eighteenth, and first thirty years of the nineteenth centuries present in many instances the same, or nearly the same, totals. When this happens I compare with these figures the deaths by small pox in the three centuries, with the results shown in the following table:—

TABLE V.

Deaths from all Causes.			Deaths by Small Pox.		
Seventeenth Century.	Eighteenth Century.	Nineteenth Century.	Seventeenth Century.	Eighteenth Century.	Nineteenth Century.
23,202	23,202	—	1,560	2,382	—
23,222	23,230	23,524	2,496	2,498	736
22,609	22,612	22,298	1,062	2,188	616
21,053	21,057	21,026	689	1,614	1,299
21,730	21,800	21,709	1,967	1,024	598
21,201	21,198	—	2,507	1,943	—
20,198	20,213	20,237	1,465	1,568	725
19,067	19,048	19,283	1,678	1,728	638
18,732	18,760	18,865	359	1,747	604
17,504	17,576	17,565	853	1,273	1,685
Totals 208,518	208,696	—	14,636	17,965	6,901
Averages 20,851	20,869	—	1,463	1,796	863

These instances, which have been chosen from others solely on account of the near approximation of the figures in the three centuries, show a less average difference than does a collection of sixteen instances. This larger number of cases gives an excess for the eighteenth century of 524 deaths by small pox.

It appears then that out of the same number of deaths from all causes occurring in the two centuries, those by small pox form a larger increment in the eighteenth than in the seventeenth century; while the figures for the nineteenth century show a very remarkable falling off in the deaths by small pox relatively to the deaths by all causes. The average figure, which is 1,463 and 1,796 respectively for the seventeenth and eighteenth centuries, is only 863 for the eight years which admit of being brought into comparison with the figures for the ten years of those earlier centuries.

I now take in hand the epidemic measles which, as I have already stated, figures on the returns for the same long period of time as small pox itself, and shares with it signs and symptoms easy to recognise and not subject to any great amount of doubt or misapprehension.

Epidemics of Measles at Different Periods.

In tracing the column of figures which represents the deaths by measles year by year, we nowhere encounter the high figures which mark the epidemics of small pox. The deaths by measles in no year reach 100, and once only the high level of 93. Where, in the columns of small pox, 100 met the eye, such figures as 20 meet it in measles. Hence for no other or better reason than that upon which I have acted in the case of small pox, I now act in the case of measles, and assume 20 as the epidemic figure, with what results the following table will show:—

TABLE VI.

Arrangement by Periods of Thirty Years.		*Arrangement by Periods of Forty Years.*	
1647–76	2	1647–86	2
1701–30	0	1701–40	1
'31–60	3	'41–80	5
'61–90	5	1801–31 (thirty-one years)	27
1801–30	26	'41–80	24
'41–70	10		

Arrangement by Centuries.

Seventeenth century	(forty-eight years)	2
Eighteenth „	(one hundred „)	9
Nineteenth „	(seventy-two „)	51

The figures in this table display a striking contrast with those of Table I. They show, it is true, more epidemics of measles in

the eighteenth century as of small pox; but a further increase in the nineteenth century, in which epidemics of small pox (100 per 1,000 deaths being taken as the standard) wholly disappear. But in the case of measles, as of small pox, I will assume both lower and higher figures as measures of an epidemic, as is done in the table which follows:—

TABLE VII.

	Centuries.		
	Seventeenth.	Eighteenth.	Nineteenth.
10 per 1,000 and less than 15	3 (48 yrs.)	9 (100 yrs.)	2 (72 yrs.)
15 „ 20	0 „	10 „	15 „
20 „ 25	0 „	4 „	17 „
25 per 1,000 and upwards	2 „	5 „	34 „
10 and upwards	5	28	68

These figures confirm and strengthen those of the preceding table. With the exception of the first line, which places the epidemic figure at 10 per 1,000 and under 15, the rest are in harmony. Making allowance for the different number of years available for comparison in the three centuries, the deaths by measles show a progressive and very considerable increase; and if reduced to an equal standard of years, the figures for 10 per 1,000 and upwards would approximate to 10, 28, and 90. Let us now see what we can glean from a statement of the highest and lowest figures, and the range of the figures as shown in

TABLE VIII.

Centuries.	Maximum.	Minimum.	Range.
Seventeenth century	93·00	0·05	92·95
Eighteenth „	52·80	0·24	52·56
Nineteenth „	69·45	6·35	63·10

These figures teach us that while deaths by measles in the seventeenth century rose to a higher figure in one year of the forty-eight, and fell to a lower figure than in the subsequent centuries, the nineteenth century was marked by higher figures than the eighteenth, but not by figures falling so low as happened in either of the foregoing centuries.

The broad lesson to be learnt from this table is that deaths from measles, when compared with deaths from all causes, have reached a higher level in the nineteenth century than in the

eighteenth. This, as it will have been seen, is the reverse of what has happened with small pox.

What has been already said of the low level to which the deaths by small pox fell in the years 1665 and 1666, is true also of measles. The deaths by measles were very few in those years, and doubtless for the same reasons.

There is another disease which may be fairly brought into comparison with small pox and measles, as being, like them, easy to recognise, and, like them, contagious and epidemic, and respecting which, for many years, both of the eighteenth and nineteenth centuries, we find the annual returns of deaths in Marshall's tables. I mean whooping cough. The first entry of deaths from this disease is found under the year 1776, and the last under 1831. The deaths from 1841 to 1881 inclusive are given in the annual summary of the registrar-general. The facts in full will be found in Table III of the Appendix, the summary of results in the table which follows :—

TABLE IX.—*Deaths by Whooping Cough* (1740 *to* 1881).

Number of Epidemics (25 *per* 1,000 *taken as an Epidemic*).

	Epidemics.
Eighteenth century (forty years)	4
Nineteenth ,, (,,)	63
From 1801 to 1831 (thirty-one years)	25
,, '41 ,, '81 (forty-one ,,)	38

The figures in this table, like those relating to measles, show an increase in the ratio of deaths from 4 in the 1,000 in the eighteenth century to 63 in the 1,000 in the nineteenth, and from 25 per 1,000 in the first thirty years of the nineteenth century, as compared with the forty years ending 1881. If we add a third to the thirty-one years, we bring the figure of deaths up to 33, which is less by 5 than the figure for the later period. It follows, therefore, that whooping cough, like measles, and unlike small pox, exhibits an increased number of epidemic outbreaks in the nineteenth century.

The figures which show the maxima and minima for the same periods of time harmonise with this the number of epidemics. This is shown in

TABLE X.

Centuries.	Maximum.	Minimum.	Range.
Eighteenth century	27·79	2·23	25·56
Nineteenth ,,	68·59	16·33	52·26

Taking the figures of these two tables together, we arrive at the conclusion that the ratio of deaths by whooping cough to deaths by all causes increased during the present century. The application of this fact, as of the facts relating to measles, to the question of the efficacy of vaccination will be presently apparent.

Bearing of Previous Facts and Inferences on the Effects of Inoculation and Vaccination.

Having set forth the inferences to be drawn from the records of two hundred and fifty years in relation to small pox as an epidemic malady, and those that relate to measles and whooping cough as being of minor importance, I now proceed to inquire whether those records enable us to throw any light upon the effects of inoculation and vaccination.

I. Inoculation.—Inoculation, as a means of imparting to a larger or smaller section of the population a form of small pox entailing a low rate of mortality, in lieu of exposing the whole population to the risk of catching the natural disease with its much higher death-rate, was first practised in England in 1722, and, for reasons which it is not necessary here to state, made its way but slowly into popular favour. Hence Dr. Gregory, with only an approximation to the truth, speaks of the interval from 1711 to 1740 as one in which there was no inoculation. Modern writers, looking back to the eighteenth century, and taking note of the deaths and death-rates from small pox, have been divided in opinion as to its ultimate effect on the mortality. One set of writers, well represented by Sir Gilbert Blane, upheld the doctrine that inoculation had on the whole been mischievous; while another set, worthily represented by Dr. Gregory, held that inoculation had lessened the mortality from small pox. Having occasion to treat of the effects of inoculation in my work on Public Health,* I gave my adhesion to the favourable view put forth by Dr. Gregory, and justified it by figures, to which I shall presently advert. But I will first refer to the facts bearing on this question which have already been established in this paper—facts, be it understood, resulting from a comparison of the figures of the seventeenth with those of the eighteenth century. These facts in general terms, divested of figures, may be stated as follows:—

1. Epidemics of small pox were more frequent in the eighteenth century than in the seventeenth.

2. The epidemics, taken one with another, were more severe in the eighteenth than in the seventeenth century.

3. The epidemics of the eighteenth century occurred at shorter intervals than those of the seventeenth.

* "Public Health." Lecture viii, p. 205.

4. Certain epidemics of the eighteenth century lasted more than one year, but none of the seventeenth century.

5. When years of equal, or nearly equal, mortality from all causes occurring in the seventeenth and eighteenth centuries are compared, deaths by small pox are found to furnish a larger contingent of deaths in the eighteenth century than in the seventeenth.

These facts afford a strong presumption that small pox, for some reason or other, was a more severe malady in the eighteenth century than in the seventeenth. But the presumption in favour of inoculation having been the cause of an increased mortality is less strong. To justify this inference, or to prove it unsound, we must bear in mind that inoculation did not come into play till towards the end of the first quarter of the eighteenth century, nor into general use till the last quarter. So that if we begin by comparing the ratio of deaths by small pox to the total deaths in the forty years of the seventeenth century from 1647 to 1686, with the corresponding forty years of the eighteenth, we shall have a series of years in the eighteenth century during which the practice of inoculation may be safely assumed to be progressively on the increase, though it had not yet attained its highest point of development. The table which follows presents the principal results of this comparison :—

TABLE XI.

	Centuries.	
	Seventeenth (1647-86).	Eighteenth (1747-86).
Epidemics of small pox (100 to 1,000)	9	17
Maxima (in round numbers)	124	173
Minima (,,)	3	15
Intervals between epidemics (approximate)	4	2
Epidemics exceeding one year	—	2
Ten equal, or nearly equal, deaths from all causes—average deaths from small pox	1,633	2,127

It will be seen that all the figures of this table agree in representing small pox as more severe in the eighteenth century at a time when inoculation was being largely practised, than in the seventeenth when the practice was unknown.

But Dr. Gregory, who thought, in opposition to Sir Gilbert Blane, that small pox proved less fatal in that part of the eighteenth century when inoculation was being practised, justified his opinion by comparing the deaths by small pox in the three periods of twenty-nine years, ending respectively with 1740, 1770, and 1800; the first period being one in which, as he states somewhat incorrectly, there was no inoculation, the second period, one in which

inoculation was coming into general use, and the third, one in which it was almost universal. Dr. Gregory obtained, as the result of this comparison, the figures (being the totals of the deaths) 65,385, 63,308, and 57,268, showing an ultimate saving of no less than 8,115 lives. I waive the objection which may be made to this division, namely, that the first period of twenty-nine years ending 1740 was not free from the practice of inoculation, and arrange my own figures in a tabular form.

TABLE XII.

	First Period, ending 1740.*	Second Period, ending 1770.*	Third Period, ending 1800.*
Epidemics of small pox	7	11	11
Maxima (in round numbers)	125	173	184
Minima („)	47	40	15
Intervals between epidemics (approximate)	3	2	2
Epidemics exceeding one year	—	2	1
Aggregate of deaths by small pox	60,391	61,398	54,958

* 1711-39, 1741-69, and 1771-99 all inclusive.

The figures of the first and third columns of this table confirm Dr. Gregory's statement, though the aggregates differ from his, and the figures of the second column show an increase. The totals, as stated by him, are larger, but his tables and mine agree in showing an ultimate saving of life. This falling off of the numbers takes place, though the epidemics are more frequent and more severe in the second and third periods. But, on the other hand, the minima fall much lower.

I know that Dr. Gregory, with whom I was personally acquainted, was moved by these results to advocate a twofold protective procedure in the shape of vaccination followed by inoculation.

I may add that when I adopt the division which I have advocated into three decades, the first representing small pox not modified by inoculation, ending 1719; the second small pox modified by inoculation in partial use, ending 1749; and the third corresponding to the large and general practice of it, ending 1799, I obtain from my tables the following figures, 21,228, 20,029, 17,785, showing an ultimate saving of 3,443 lives. I had calculated the numbers for the three periods, when reduced to the uniform standard of a million inhabitants, at 31,416, 28,282, and 22,863.

Doubtless in the eighteenth century there were influences at work tending strongly to counteract any injurious influence which inoculation may be presumed to have exerted by spreading the disease which it mitigated. There was the progressive rooting out

of small pox from one of its centres of distribution, our prisons; some improvement, not easy to define or measure, in the sanitary condition of our town population, and, in the last years of the century the abstraction of large numbers of our adult males to supply our armies and fleets during the early years of the war with France—an abstraction which must have largely diminished (as did the deaths and lessened population caused by plague in the year 1665) the possible victims of small pox. Vaccination, though introduced in 1796, had not yet been brought into play upon more than a few thousand persons in the years of the century that remained. If we take these possible causes of diminished mortality fairly into account, we shall probably arrive at the conclusion that the practice of inoculation by effecting a large saving of life among those on whom it was brought to bear, did in a great degree counteract the currency given to small pox among those whom it left alone.

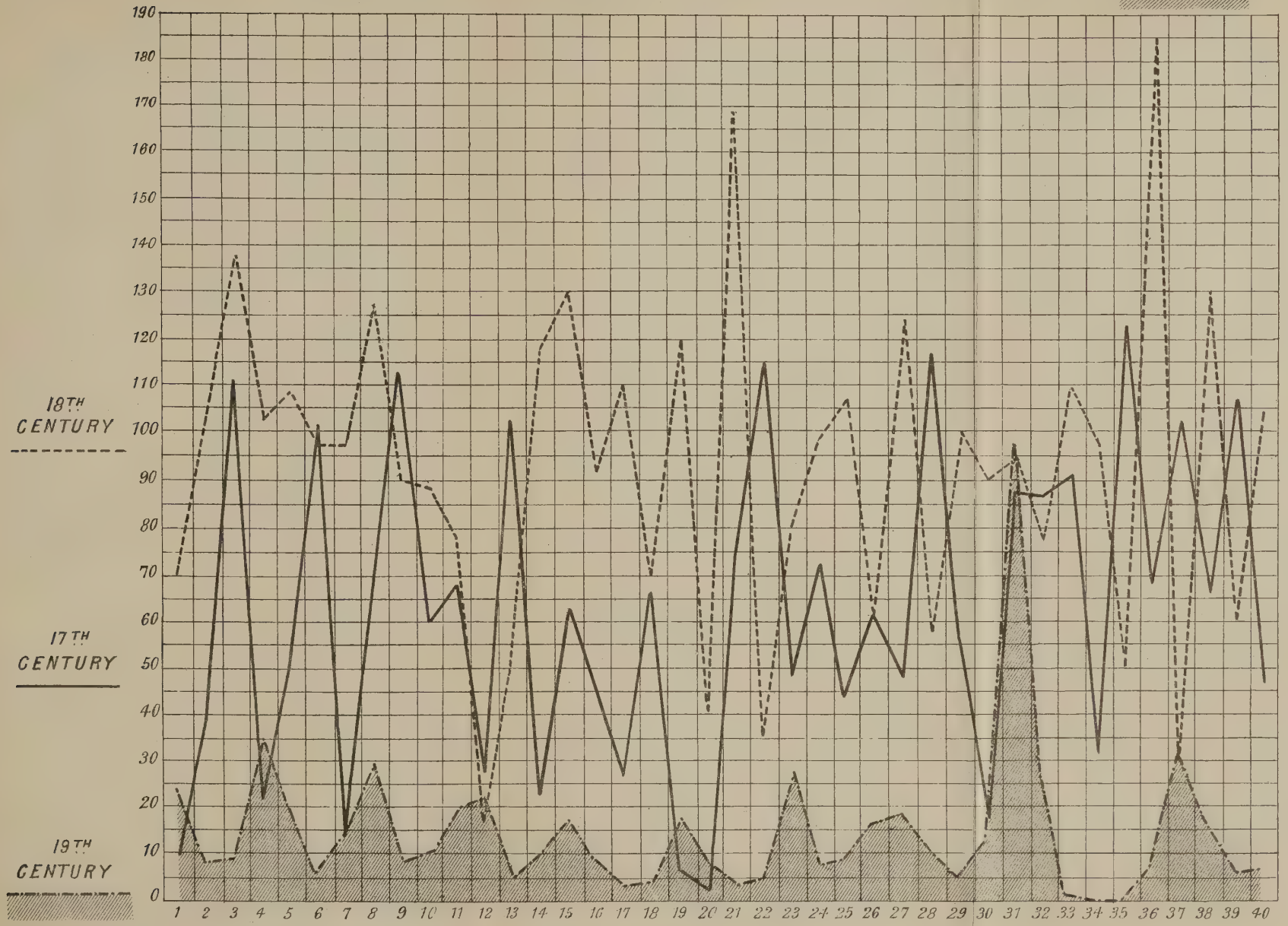
II. VACCINATION.—Is vaccination a preventive of small pox? To this question there is, there can be, no answer except such as is couched in the language of figures. The response must issue from a comparison of the deaths from small pox in a period prior to the introduction of vaccination with the deaths from the same disease in some period subsequent to its introduction, and, as the alleged preventive is known to have come into play by degrees, and to have taken effect on an ever increasing section of the population, the figures may be expected to harmonise with that known condition of things. They may also be expected to form an exception to the rule of all those diseases to which no similar method of prevention has been applied. For if they did not display such difference, but simply shared with them the common property of progressive decline, the diminishing mortality might be explained by some sanitary improvements common to them all. The figures, therefore, which present the ratio of deaths by small pox to deaths by all causes, ought either to stand alone in the extent and progressiveness of their fall, or, if they resemble any other epidemic diseases in this respect, they should so far excel them as to admit of division into two parts, of which the one should be taken as the results of sanitary improvements which have lessened the mortality of several diseases in common, and the other should stand alone—a progressive reduction peculiar to itself. I shall presently make application of these tests, but before doing so, shall revert to certain facts established in the earlier part of this paper.

1. The first in order of these facts is the entire absence in the present century of epidemics of the intensity represented by the ratio of 100 deaths by small pox to 1,000 deaths from all causes, though one such epidemic occurred in the year 1800, and several in all periods of the eighteenth as of the seventeenth century.

SMALL POX.

RATIO OF DEATHS BY SMALL POX TO 1,000 *DEATHS FROM ALL CAUSES,*

40 *years ending* 1686, ——————, 40 *years ending* 1800, – – – – – – – – – – –, 40 *years ending* 1880, ▨▨▨▨▨▨▨▨▨▨▨▨



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2. The marked excess of epidemics in the eighteenth century, when compared with the seventeenth century, is a fact of importance in its bearing on the question in hand; for it shows that small pox had not, even up to the close of that century, undergone any considerable abatement. Small pox, so to speak, had witnessed and survived the extinction of the plague, of which the last case is recorded in 1680, and the omission from the bills of mortality of such fatal maladies as the "Parish Infection."

3. That the small pox up to the close of the eighteenth century had undergone no considerable abatement, is further proved by the fact that some of the most severe epidemics took place in the last twenty years of the century (169 in the 1,000 in 1781, 184 in the 1,000 as late as 1796). This last epidemic was the worst on record, 173 in the 1,000 being the only one on the same scale, and this occurred in 1752.

4. The lowest figures, too, are not without instruction, as bearing upon the efficacy of vaccination. The lowest figure recorded during the seventeenth century is 2·98 per 1,000, in the year following the great plague, whereas the lowest recorded figure in this nineteenth century, during the prevalence of vaccination, is 0·56, or less than one-fifth of the low figure already accounted for by the incidents attending and following the great plague and great fire of London.

5. The lessons thus taught us in regard to the prevalence of small pox in the eighteenth century are rendered more impressive by the fact that epidemics were more frequent, or, in other words, separated on the average by shorter intervals of comparative freedom, in that century than in the seventeenth. The epidemics of the eighteenth century occurred once in two years, those of the seventeenth once in four.

6. In the eighteenth century again, and in that alone, were the epidemic outbreaks of small pox of more than one year's duration. Twice they extended to two years, once to four.

7. If we compare years of equal mortality from all causes in the seventeenth and eighteenth centuries, we find deaths by small pox more numerous on the average in the eighteenth century than in the seventeenth, and much less numerous in the nineteenth than in either of the previous centuries.

8. If we compare deaths by measles with those by small pox we find them marked by this difference, that while there was no epidemic of small pox in the nineteenth century, there were several epidemics of measles, and that the mortality from measles rose to a higher level in the nineteenth than in the eighteenth century, being the reverse of what happened with small pox.

9. So also of the whooping cough. It caused a much higher

proportion of the total deaths in the nineteenth than in the eighteenth century, and therefore strengthens the lessons taught us by the measles.

Under the foregoing headings I have marshalled a series of statements which, if I am not mistaken, bespeak for the further examination of this subject a serious and sustained attention.

I shall, I think, make my meaning plainer if, in what remains of this paper, I adopt the standard of 100,000 instead of 1,000, thus avoiding the use of decimals. I shall also add to the confidence which the figures I have already employed may have produced if I place side by side with them, as I do in Table IV of the Appendix, the ratios of deaths by small pox and by measles to 100,000 of the living population, drawing from these figures such inferences as they may seem to warrant.

I have already stated that in no year of the present century has the ratio of deaths by small pox to deaths by all causes attained the high level of 100 and upwards so frequent in the last years of the eighteenth. If we count the year 1800 as the last of the eighteenth century, these high ratios ended with that year, in which the ratio of deaths by small pox was 10,443 per 100,000. Twice only in the seventy-two years of the present century did the ratio approximate at all closely to that high figure. These were the years 1805 and 1871, when the figures were 9,592 and 9,837 respectively. For the past year 1881, they were 2,924. In fifty-eight years then, we had two epidemics approaching in severity the mildest of the old epidemics of the seventeenth and eighteenth centuries. In thirty-seven years of the seventeenth century we had nine such epidemics: in fifty-five years of the eighteenth we had twenty-four. Between these two years of maximum mortality much lower figures present themselves, especially after the year 1841, when the returns of the registrar-general may be said to have assumed a permanent form. The years following this date, like the years of the earlier centuries, are marked by frequent fluctuations in the ratios of deaths from small pox, which fluctuations contrast strongly with the comparative steadiness of the figures for measles, and for whooping cough, as will be seen on reference to Tables I and III in the Appendix. But these fluctuations of the last forty years were not only frequent in occurrence, they were great in amount, falling so low in 1875 as 56 deaths from small pox in 100,000 from all causes.

The value of facts of this order can only be ascertained by comparison with others relating to the same disease at earlier periods and under different circumstances, and to other diseases at the same period.

Now the first question that suggests itself is this—whether the ratio of deaths by small pox to deaths by all diseases ever fell so

low in the seventeenth and eighteenth centuries. The answer is in the negative. The minimum of the seventeenth century occurred, as I have already stated, in the year 1666, under circumstances altogether exceptional—circumstances which reduced the deaths by measles in a like degree, and the deaths from all causes to an unusually low amount. If we exclude this low figure of 298 and that of the previous exceptional year 673, we find the minimum to have occurred in the year 1647, when it was 1,008. On the other hand, this low figure of small pox mortality in the nineteenth century occurred in a year of very high mortality from all causes.

But the significance of this low ratio of 56 per 100,000 is greatly increased if we compare it with the lowest ratio of the eighteenth century. Twice, and twice only in the hundred years, did the minimum sink so low as 1,500 or thereabouts. The first occasion was in 1702, when the ratio was 1,596 in 100,000, and the other in 1772, when it was 1,532. If we take the last figure as the lowest of the century, we have the following contrast:—

17th century, year	1647,	1,008	deaths by small pox	in 100,000	from all causes.
18th „	1772,	1,532	„	„	
19th „	1875,	56	„	„	

So that in a year of this century of exceptionally high mortality from all causes, the deaths by small pox fell to 56 in 100,000, or exactly an eighteenth of the minimum of the seventeenth century, and about 1 in 27 of the minimum of the eighteenth century.

If, again, we deal with the highest instead of the lowest figures, we get the following results:—

17th century, year	1681,	12,440	deaths by small pox	in 100,000	from all causes.
18th „	1796,	18,394	„	„	
19th „	1871,	9,837	„	„	

Hence it appears that the maximum ratio of deaths by small pox in the nineteenth century, the epoch of vaccination, very little exceeded half the maximum of the eighteenth, while the minimum fell to the curiously low figure of one twenty-seventh of that recorded in the previous century. The contrast afforded by the high figures of the seventeenth and eighteenth centuries and the low figures of the nineteenth is well shown by the annexed curves.

These contrasts will appear the more significant if I compare them with what happened in the cases of measles and whooping cough.

The figures for measles in the three centuries were as follows:—

The maximum, which was 9,300 in the 100,000 deaths from all causes in the seventeenth century, fell to 5,280 in the eighteenth,

to rise to 6,945 in the nineteenth, while the minimum rose from 5 in the 100,000 in the seventeenth century to 52 in the eighteenth, and 635 in the nineteenth. So that the movement, if I may so express myself, from the eighteenth century to the nineteenth was one of increase, both for maxima and minima, in the case of measles, of decrease in the case of small pox.

In the case of whooping cough again, the maximum in the eighteenth century, which from the year 1740 to 1800 was 2,779 per 100,000 deaths, rose to 6,859 in the nineteenth century, while the minimum rose from 223 to 1,633, again the very reverse of what happened with small pox.*

If then it were to be alleged that the remarkable fall in the maximum mortality from small pox, and still more remarkable fall in the minimum, are attributable not to vaccination but to miscellaneous sanitary reforms and improvements, we are furnished with a conclusive answer in the figures for measles and whooping cough. How happened it, it may well be asked, that the same sanitary reforms and improvements which so greatly lowered the mortality from small pox, whether we measure it by the maxima or the minima, acted on measles and whooping cough in the opposite sense, raising in lieu of lowering their respective death-rates?

An advocate of vaccination might take his stand upon these numerical contrasts, and treat any further inquiry in the same direction as mere waste of time; but a critical inquirer after truth might seek to push the investigation to its utmost limits by bringing forward all the diseases which may fairly claim to be brought into comparison with small pox, and he might further insist on making use of any existing standard of comparison other than the ratio of deaths to deaths. This cautious and sceptical method I now propose to adopt. I shall first present a tabular analysis of the facts relating to small pox, using the ratio of deaths to deaths, and then make a final comparison of deaths by small pox to the living population, placing this comparison side by side with a similar comparison for other diseases which, like small pox, may be presumed to have been favourably affected by sanitary reforms and movements. The following table presents at one view the first order of facts, with which I have hitherto been dealing throughout this inquiry, taking short periods of five years for purposes of comparison, and appending a column of notes of the chief incidents of this century which may be supposed to have exercised an influence on the mortality:—

* The years of the maxima for measles were 1648, 1771, and 1808; of the minima, 1675, 1704, and 1809; the years of the maxima for whooping cough were 1796 and 1831; of the minima, 1744 and 1808.

TABLE XIII.

Year ending	Ratio of Small Pox to 100,000 Deaths from all Causes.			Ratio of Measles to 100,000 Deaths from all Causes.			
	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	
1795	10,952	4,910	8,574	2,226	831	1,327	
1800	18,394	3,068	10,180	1,712	1,079	1,383	Vaccination introduced, 1796
1805	9,592	3,650	7,024	3,633	702	2,479	
'10	7,074	5,858	6,476	6,945	635	3,634	National vaccine estab. 1808
'15	7,034	3,308	4,728	4,236	1,378	2,851	
'20	5,263	2,136	3,681	5,443	3,614	4,020	
'25	6,178	2,753	3,828	3,774	1,773	29,654	
'30	2,897	2,423	2,793	3,728	2,212	2,828	
1845	3,529	792	1,862	4,797	2,138	2,611	First Vaccination Act, 1840
'50	2,804	510	1,321	3,006	1,510	2,035	Sanitary legislation, 1847
'55	2,121	351	1,400	2,337	1,088	1,676	
'60	1,855	263	972	3,696	2,150	2,810	Vaccination compulsory, 1853
'65	2,808	332	1,050	3,563	1,627	2,541	
'70	1,896	352	1,207	2,759	1,611	4,152	Vaccination Act, 1867
'75	9,837	56	2,433	2,847	1,717	2,165	Public Health Act, 1875
'80	3,293	536	1,408	3,082	1,781	2,376	
1881	2,924			3,125			
	$9,592 \div 56 = \frac{1}{171}$			$6,945 \div 635 = \frac{1}{11}$			

In this table the following facts are made apparent:—

1. The high mortality from small pox which prevailed in the five years ending 1800.

2. The progressive lowering of the mortality from small pox during the first six quinquennial periods prior to the epoch of sanitary reform, as shown in the three columns of maxima, minima, and average.

3. A like progressive lowering of the mortality coincident with

sanitary reforms and vaccine legislation during the eight quinquennial periods ending with the year 1880.

4. Several interruptions in the progressive decline in all the columns, and a recurrence of the high figure which stands at the head of the table under the quinquennium ending 1805, in the quinquennium ending 1875, after the long interval of fifty-eight years.

The general broad result of the table is a great decrease of mortality, both in the period of thirty years during which vaccination being received with public favour, obtained the support of the State in the form of the national vaccine establishment founded in the course of the second quinquennium, and in the longer period of forty years during which vaccination was first made gratuitous (1840), and then compulsory (1853).

In the first period of thirty years there was no sanitary legislation to which to attribute the decreased mortality from small pox, and during this period the deaths by measles tended rather to increase than diminish, while the deaths by small pox fell, on an average, from 7,024 to 2,793, being a decrease of 4,231, or much more than half the highest figure. In the second period of forty years the ratio fell from 2,793 (the lowest average figure of the first period) to 1,408, being a decrease of somewhat less than a half. In this second period the decrease in the case of measles was very small. But the most striking result of the table is seen if we compare the highest figure recorded during the first quinquennium ending 1805 with the lowest recorded in that ending 1875. The interval between the two is that which separates 9,592 from 56, or 9,536. The minimum compared to the maximum is as 1 to 171. On the other hand, the minimum for measles compared with the maximum for that disease (635 and 6,945) is less than 1 to 11. So that the reduction in the case of small pox was about seventeen times as great as the reduction in the case of measles.

I now extend this comparison from small pox and measles to small pox and the other epidemic maladies brought into comparison with it in the pages of the registrar general, with what results will be seen in Table XIV.

TABLE XIV.—*Ratio of Small Pox and of Other Diseases to One Hundred Thousand Persons Living.*

Year ending	Small Pox.			Measles.			Scarlet Fever and Diphtheria.			Whooping Cough.			Fever.			Diarrhœa.			Cholera.		
	Maximum.	Minimum.	Average.	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	Maximum.	Minimum.	Average.
1845	89	19	46	74 ×	12 ×	72	149 ×	35 ×	79 ×	121	64 ×	91	107 ×	61 ×	75 ×	43 ×	26 ×	36 ×	6 ×	1 ×	3 ×
'50	72	12	34	81	35	51	212	44 ×	93 ×	103 ×	67	82 ×	164	87 ×	120	151	83	102	618	5 ×	133
'55	48	9	34	56 ×	25 ×	42 ×	139 ×	54 ×	96 ×	108	65	92	112	90	101	126	80	102	429	6	97
'60	42 ×	6 ×	21 ×	88 ×	49	64	156 ×	61 ×	106 ×	101 ×	64 ×	83 ×	105 ×	53 ×	76 ×	121	50 ×	90	8	2	5
'65	69	8 ×	26	95	38	62	199	87	134	126	74	91	128	66	105	121 ×	60 ×	72 ×	7 ×	4 ×	5 ×
'70	46 ×	9	19 ×	73	37 ×	52	197	61	127	119	61	85	88	63	75	128	96	109	184	7	43
'75	54 ×	1 ×	60	64 ×	40	49	133	28 ×	71 ×	98 ×	54	78 ×	52	35	43	118	91	104	7	3	4
'80	71	12	31	67	40	52	96	53	75	123	51	84	38	24	31	99	50	81	4	1	2
1881	62			66			36			51			31			80			2		
Max. and min.	89—1			95—12			212—28			126—51			164—24			151—26					
Ratio of max. to minima	89 fold			8 fold			7 fold			2 fold			7 fold			6 fold					
				$\frac{1}{11}$th of small pox			$\frac{1}{12}$th of small pox			$\frac{1}{44}$th of small pox			$\frac{1}{12}$th of small pox			$\frac{1}{15}$th of small pox					

Note.—The crosses indicate cases in which the movement of reduction is interrupted.

The results of this table are very remarkable, and may be thus briefly summarised:—

1. The highest figure for small pox in any year is 89 per 100,000 persons living, the lowest, 1 for the same living population; so that the lowest figure is equal to one-eighty-ninth of the greatest number of deaths.

2. The highest figure for measles is 95 and the lowest 12: showing a fall to one-eighth, or an eleventh part of the fall in the case of small pox.

3. The highest figure for scarlet fever and diphtheria is 212 and the lowest 28: being a like fall to less than one-eighth, or, again, an eleventh part of the fall in the case of small pox.

4. The highest figure for whooping cough is 126, the lowest 51: being a fall to much less than a half, or less than a forty-fourth of the fall of small pox.

5. In the case of fever the highest figure is 164, the lowest 24: being a fall to one-seventh, or a fifteenth of the fall in the case of small pox.

6. For diarrhœa the highest figure is 151, and the lowest 26: being a fall to a sixth, or a fifteenth of the fall in the case of small pox.

That I may not omit from the table a disease included in the columns of the registrar general, I give the figures for cholera, though, as a special exotic epidemic, it cannot be admitted to a comparison with the rest.

Taking then one epidemic malady with another, it appears that the mortality by small pox stands alone in the amount of reduction it has undergone during this century, the other epidemic maladies showing an abatement ranging from one-eleventh, twelfth, or fifteenth, to one forty-fourth of that higher amount. If we may assume that all these epidemic maladies shared with small pox the benefits conferred by the several sanitary reforms that have signalised the last half of this century, there still remains to be accounted for the remarkable difference between these figures. Vaccination is the concurrent force brought to bear on small pox, can we find any other to account for the difference? I think not; I can imagine no other.

But the remarkable epidemic of small pox which occurred in 1871 may be brought forward as an argument in favour of a desponding view of the preventive efficacy of vaccination, assuming vaccination to have been the cause of all the abatement that small pox has not shared with other maladies. Let us then examine this remarkable outbreak by the light thrown upon it by its surroundings.

In the first place it should be observed that this outbreak stands

alone in the long interval which separates it from any attack of like severity. The longest interval between epidemic and epidemic in the previous centuries was eight years or nine; but we must go back to the year 1805, a space of fifty-six years of recorded facts, to find such another. Let us take the two outbreaks, with the facts of the years that preceded and followed them, and note the differences, if any, between them. I present the figures in ratios to 1,000 deaths, and in round numbers.

TABLE XV.—*The Two Epidemics of the Nineteenth Century compared.*

1805.

1800 ..... 104, 75, 82, 61, 37, **96**, 65, 71, 59, 70, 60 1810

1871.

'66 ..... 17, 19, 8, 4, 13, **98**, 25, 1, 1, 1, 9 ..... '76

Before commenting on this curious contrast, I will deal in the same manner with the four great epidemics of the eighteenth century, which claimed as their victims upwards of 150 deaths by small pox in 1,000 deaths by all causes.

TABLE XVI.

1752.

1747 ..... 54, 75, 103, 53, 47, **173**, 40, 104, 91, 77, 155 1757

1755.

'52 ..... 173, 40, 104, 91, 77, **155**, 72, 132, 110, 72, 104 ..... '62

1781.

'76 ..... 91, 110, 70, 122, 42, **169**, 35, 81, 99, 106, 59 ..... '86

1796.

'91 ..... 93, 78, 110, 99, 49, **184**, 31, 129, 61, 104, 75 1801

The following table will assist us in our comparison :—

TABLE XVII.

Total of Deaths in Five Years preceding.		Total of Deaths in Five Years following.
332	**173** (1752)	467
485	**155** ('55)	490
435	**169** ('81)	380
429	**184** ('96)	400
359	**96** (1805)	325
61	**98** ('71)	37

The figures in these three tables do but confirm each other. They agree in enforcing the same lesson. The most severe epidemics of the last century were preceded and followed by one year of a comparatively low mortality, these being in their turn preceded and followed by high figures in which one or two epidemics found place. The first epidemic of the present century, which could not have

been greatly influenced by vaccination, presented somewhat similar figures; but the second epidemic (that of 1871) exhibited the most striking contrasts. For the years directly preceding and following not only display comparatively low figures, but some of the lowest figures to which the deaths from small pox have ever fallen are to be found in the groups of four years which preceded and followed these. The figures for the three years 1873, 1874 and 1875 are specially worthy of observation. Expressed in round numbers they are all represented by the figure 1; but the exact figures are 1·49, 0·74, and 0·56. To these low levels did the deaths by small pox fall after the epidemic of 1871. The epidemic itself is not more extreme on the one hand than the figures of the years which follow are on the other. The storm of that year, overleaping all barriers, was speedily followed by a calm as strange as the tempest itself. That atmospheric condition, whatever it may be, to which our epidemics are due, was so favourable to attacks of small pox that the barrier of vaccination, though effective in ordinary years, proved insufficient in this; the more and the less susceptible were alike seized, and the population swept clear for a time of almost all possible victims. Then vaccination, a protective in ordinary seasons, resumed its sway, and almost brought about the cessation of the small pox. I can imagine no better explanation than this; but whatever the efficacy of vaccination, certain it is that this nineteenth century in which it has been increasingly at work, and the last forty years, in which it has worked side by side with several sanitary reforms and improvements, have witnessed numerical phenomena which no sanitary reform can explain, and which vaccination alone appears competent to account for.

I shall now endeavour to present in a series of short propositions the conclusions which the figures of this paper appear to justify.

1. That our records of deaths by small pox in the metropolis reach back, with slight interruptions, two hundred and fifty years, together with similar returns of deaths by measles, and by all causes.

2. That if we use the deaths by all causes, year by year, as a standard of comparison by which to measure the deaths by small pox, and by other special maladies, we obtain ratios from which we can draw instructive inferences important in their bearing on such questions of practical importance as inoculation and vaccination.

3. That if we assume, in the case of small pox, 100 deaths in 1,000 from all causes to be an epidemic, and so name it, we find such epidemics to have been of frequent occurrence in the seventeenth and eighteenth centuries, and especially in the last half of the eighteenth, but absent in the nineteenth; and if we adopt a lower figure as the sign of an epidemic, we still have more epidemics in the two earlier centuries than in the present century.

4. That the eighteenth century far surpasses both the seventeenth and the nineteenth in the number, frequency, and magnitude of its epidemics; that it contributes more largely than they do to the sum of the deaths from all causes; and that it stands alone in presenting to us epidemics of more than one year's continuance.

5. That the measles, on the contrary, if we take the ratio of 20 deaths per 1,000 as the standard of an epidemic, shows a progressive and very considerable increase from the seventeenth to the eighteenth, and from the eighteenth to the nineteenth century.

6. That whooping cough also, taking 25 deaths per 1,000 as the epidemic standard, shows an increased ratio of deaths in the nineteenth as compared with the eighteenth century.

7. That though the eighteenth century, and especially the last part of it, was remarkable for the number, frequency, and severity of its epidemics, and though it is probable that inoculation contributed to produce that result, it did nevertheless effect some saving of life by greatly mitigating the disease in most of those on whom it was brought to bear, thus somewhat more than counteracting the mischief it did by spreading the disease among those to whom it was not applied.

8. That any discrepancies which may seem to exist in the foregoing statement (No. 7) are reconciled when we take into account the fact that the lowest figures fell while the highest rose.

9. That a certain presumption in favour of vaccination as a preventive of small pox is afforded by the entire absence in the present century of epidemics of small pox, when 10 per cent. of the deaths from all causes is taken as the measure of an epidemic.

10. That this presumption is strengthened by the fact that small pox, up to the very close of the eighteenth century, had undergone no considerable abatement; also by the fact that the lowest returns of deaths by small pox are to be found in the nineteenth century as well as the longest interval between the only two epidemics which approach the standard of 10 per cent.

11. That the fall from the highest to the lowest ratio of deaths by small pox in the nineteenth century is greatly in excess of the fall from the highest to the lowest figure of the deaths by small pox in the eighteenth century.

12. That when we compare the eighteenth with the nineteenth century in the case of measles and whooping cough, we discover an opposite condition of things—an increase of numbers instead of a decrease.

13. That there was a progressive lowering of the mortality from small pox in the early part of the nineteenth century prior to the introduction of sanitary reforms and improvements.

14. That this progressive decrease of mortality from small pox

continued during the later years of this century after the introduction of these sanitary reforms and improvements.

15. That when we substitute for the ratio of deaths to deaths the ratio of deaths by small pox to the number of persons living, we change the figures without altering the results.

16. That when we make use of this ratio of deaths to the living, we find the deaths by small pox in 100,000 living persons to fall from a maximum of 89 to a minimum of 1, a decrease quite unexampled in the case of other epidemics.

17. That the epidemics measles, scarlet fever and diphtheria, whooping cough, fever and diarrhœa all undergo a decrease in the last forty years of this century, but that the decrease is only a small fraction of that which occurred in the case of small pox; their highest figure not amounting to a tenth part of the decrease of small pox.

18. That if we assume, as we are certainly justified in doing, that an equal improvement has been wrought by sanitary measures in all epidemic maladies, small pox included, we must needs attribute the remarkable excess of improvement in small pox to some cause or causes other than sanitary reforms, and that there is only one cause to which it is reasonable to attribute this excess, namely vaccination.

19. That there is nothing in the numerical surroundings of the great epidemic of the year 1871 (less severe, be it well understood, than the epidemics of the past centuries) which ought to shake our confidence in the preventive efficacy of vaccination; for the years which preceded, and still more those that followed it, show by the smallness of the figures to what a low degree of mortality some cause or causes could reduce this formidable malady, small pox.

20. That, taking a careful and comprehensive view of all the facts that bear upon this question, it is allowable to conjecture that while vaccination does not act as a sufficient protection in epidemic years, it does effectually guard against attacks of small pox in all other years, and that where it does not protect it mitigates.

SUPPLEMENT.

I stated at the beginning of this paper that I was compelled to hold in reserve the figures and calculations for small pox and measles relating to England and Wales with which I had provided myself. I might have used these as the materials of a distinct communication to the Statistical Society; but, on consideration, I have preferred to treat them as a supplement to the present paper.

The figures are those of the twenty-eight years 1852 to 1879 inclusive. They are taken from the Forty-second Annual Report

of the Registrar-General, p. lxxii. This table at a first glance reveals the striking difference which exists between the rate of mortality prevailing in a large city, such as our metropolis, and an extensive tract of country such as England is. The easy communication between the several parts of a city and the comparatively difficult communication between one district and another of a kingdom, goes far to explain the different proportionate number of seizures; while the denser population explains the higher rate of mortality prevailing among those attacked. Roughly stated, the metropolis suffers more than a twofold loss by death, that is to say, twice the loss for England and Wales, London itself included, and much more than twice the loss of England and Wales if the metropolis were excluded. But this statement applies only to small pox. The difference in favour of England is much less in the case of measles. The lower death-rate for small pox, and the great difference between it and measles will appear more clearly if I compare the twenty-eight years for England with the figures for London during the same years.

TABLE XVIII.—*England and London compared (One Hundred Thousand Deaths from all Causes).*

Years.	Ratios of Small Pox.		Ratios of Measles.	
	London.	England.	London.	England.
1852	2,121	1,798	1,088	1,435
'53	351	748	1,628	1,162
'54	941	641	1,911	2,118
'55	1,677	593	1,417	1,727
'56	927	583	2,582	1,824
'57	263	937	2,268	1,419
'58	377	1,436	3,696	1,950
'59	1,855	873	2,150	2,166
1860	1,441	650	3,354	2,260
'61	332	303	1,627	2,081
'62	543	373	3,464	2,244
'63	2,808	1,258	2,299	2,395
'64	699	1,550	3,563	1,679
'65	870	1,306	1,753	1,744
'66	1,728	604	2,759	2,184
'67	1,896	533	1,611	1,398
'68	809	427	2,659	2,419
'69	352	316	1,865	2,083
1870	1,253	508	1,866	1,463
'71	9,837	4,491	1,774	1,804
'72	2,502	3,878	2,354	1,732
'73	149	479	2,847	1,503
'74	74	410	2,187	2,327
'75	56	173	1,717	1,139
'76	947	472	2,214	1,953
'77	3,293	854	3,082	1,807
'78	1,683	343	1,781	1,438
'79	536	102	2,953	1,746
Sum of ratios	40,320	26,639	64,469	51,200

In commenting upon this table I will follow as nearly as I can the order already adopted in the case of the metropolis.

1. *Of Epidemics of Small Pox, their Magnitude and Number.*—The scale of 10 per cent., which I took as a convenient measure of an epidemic for London, is not applicable to England; but if we may assume 35 and upwards as our epidemic standard, we should have only two epidemics in the twenty-eight years. These would occur in the year 1871 (the chief of the two years in which the deaths by small pox in London approached the ratio of 10 per cent.) and the following year 1872. It may be said, indeed, that, as in London we had two epidemics in the twenty-eight years approaching the old standard of 10 per cent., so in England we had one epidemic extending over two years, the number of deaths being less than half of those that marked the London epidemic of 1871.

2. *The Maxima and Minima.*—Whereas the maxima and minima for London in the twenty-eight years are 9,837 and 56, those for all England are 4,491 and 102.

3. *Frequency of Epidemics.*—Though we had in England in the twenty-eight years but one epidemic of two years' duration, there are five other years in which the ratios are represented by four figures, and these high figures are separated by intervals of five, four, and five years, while the epidemic of 1871-72 is followed by seven years of comparatively low mortality.

4. *Epidemics of Measles.*—If we continue to take 20 deaths in the 1,000 as a measure of an epidemic, we have ten epidemics in the twenty-eight years. But it is noticeable that between measles in London and measles in England, there is much less difference than between small pox in London and small pox in England. Measles shows a fall of less than 1 in 5, while small pox in England is less than in London as 26 is less than 40. Small pox in England, therefore, when compared with small pox in London as a standard, shows a much lower rate of mortality than measles does.

5. In order to discuss *the bearing of the facts relating to small pox in England on vaccination* (for inoculation has no place in this inquiry), it will be necessary to arrange the figures in four equal periods of seven years. This is done in the table which follows; the facts for measles being added, and London included:—

TABLE XIX.—*Small Pox in England in Periods of Seven Years.*

Years.	Small Pox.						Measles.					
	London.			England.			London.			England.		
	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.	Maxima.	Minima.	Average.
1852-58	2,121 ×	263 ×	951 ×	1,798	593	962	3,695 ×	1,088 ×	2,084 ×	2,118 ×	1,162 ×	1,662 ×
'59-65	2,808 ×	332 ×	1,221 ×	1,550 ×	303 ×	902 ×	3,563	1,625	2,601	2,395 ×	1,744	2,081
'66-72	9,837	352	2,625	4,491	316	1,539	2,759 ×	1,611 ×	2,024 ×	2,419	1,398	1,869
'73-79	3,293	56	2,397	872	102	405	3,082	1,717	2,397	2,327	1,139	1,702

It will be seen from this table that all the figures for England—the maxima, the minima, and the averages—show a greatly diminishing death-rate by small pox, and are consistent with the alleged efficiency of vaccination as a preventive. The maximum mortality falls in the twenty-eight years from 1,798 in the 100,000 deaths to 872, or less than one-half, the minimum from nearly 600 to little more than 100, or a sixth, and the average from 962 to 405, or considerably more than a half. The figures would have shown a progressive decrease but for the remarkable increase of small pox mortality which characterised the seven years from 1866 to 1872 inclusive, and attained its climax in the epidemic of 1871. There is nothing therefore in these figures to militate against the protective power of vaccination, and much in its support.

But this group of annual returns for London does not yield the same support to the theory of the protective power of vaccination. The maxima show a progressive increase, even when the figures for the epidemic of 1871 are set aside, and the same is true of the averages; but the curiously low figure of 56 per 100,000 deaths still figures among the minima of the last seven years. Here, however, it is necessary to remark, that if the figures thus grouped do not lend support to vaccination, neither do they confirm the theory of progressive sanitary improvement.

On the other hand, the figures for measles show for this same period of twenty-eight years, but a slightly decreased death-rate for England when measured by the minima, but an increased rate when tested by the maxima and the averages; while for London the minima and the averages exhibit a considerable increase, but the maxima a progressive decrease.

APPENDIX.

TABLE I.—*Deaths from Small Pox and Measles, and from all Causes, in London*, 1629 *to* 1879.

Years.	Deaths by			Ratio of Deaths by	
	Flox and Small Pox.	Measles.	All Causes.	Flox and Small Pox	Measles
				to 1,000 Deaths from all Causes.	
1629	72	42	8,814	8·17	4·47
'30	40	2	10,471	3·82	0·19
'31	58	3	8,458	6·85	0·35
'32	531	80	9,539	55·66	8·38
'33	72	21	8,427	8·54	2·49
'34	1,354	33	10,865	124·62	3·03
'35	293	27	10,641	27·53	2·53
'36	127	12	23,382	5·43	0·51
1647	139	5	13,784	10·08	0·36
'48	400	92	9,896	40·42	93·00
'49	1,190	3	10,532	112·29	0·28
'50	184	33	8,681	21·19	3·80
'51	525	33	10,773	48·73	3·06
'52	1,279	62	12,541	101·98	4·94
'53	139	8	9,082	15·30	0·88
'54	812	52	13,126	61·86	3·96
'55	1,294	11	11,409	113·42	0·96
'56	823	153	13,752	59·85	11·12
'57	835	15	12,434	67·15	1·20
'58	409	80	14,993	27·27	5·33
'59	1,523	6	14,756	103·21	0·40
'60	354	74	15,118	23·41	4·89
'61	1,246	188	19,771	63·02	9·50
'62	768	20	16,554	46·39	1·20
'63	411	42	15,356	26·76	2·73
'64	1,233	311	18,297	67·38	16·99
'65	655	7	97,306	6·73	0·07
'66	38	3	12,738	2·98	0·23
'67	1,196	83	15,842	75·49	5·23
'68	1,987	200	17,278	115·00	11·57
'69	951	15	19,432	48·93	0·77
'70	1,465	295	20,198	72·53	14·60
'71	696	7	15,729	44·24	0·44
'72	1,116	118	18,230	61·21	6·47
'73	853	15	17,504	48·73	0·85
'74	2,507	795	21,201	118·24	37·49
'75	997	1	17,244	57·81	0·05
'76	359	83	18,732	19·16	4·43
'77	1,678	87	19,067	88·00	4·56
'78	1,798	93	20,678	86·95	4·49
'79	1,967	117	21,730	90·52	5·38
'80	689	49	21,053	32·72	2·32
'81	2,982	121	23,971	124·40	5·04
'82	1,408	50	20,691	68·04	2·41
'83	2,096	39	20,587	101·81	1·89
'84	1,560	6	23,202	67·23	0·25
'85	2,496	197	23,222	107·48	8·48
'86	1,062	25	22,609	46·97	1·70

TABLE I.—*Deaths from Small Pox, Measles, and all Causes—Contd.*

Years.	Flox, Small Pox, and Measles.	All Causes.	Ratio of Deaths by Flox, Small Pox, and Measles, to 1,000 Deaths from all Causes.
1687	1,551	21,460	72·27
'88	1,318	22,921	57·50
'89	1,389	23,502	59·10
'90	778	21,461	36·25
'91	1,241	22,691	54·69
'92	1,592	20,874	76·26
'93	1,164	20,959	55·53
'94	1,683	24,100	69·83
'95	784	19,047	41·16
'96	196	18,638	10·51
'97	634	20,970	30·23
'98	1,813	20,183	89·82
'99	890	20,795	42·79
1700	1,031	19,443	53·02

	Deaths by			Ratio of Small Pox	Ratio of Measles
	Small Pox.	Measles.	All Causes.	to 1,000 Deaths from all Causes.	
1701	1,095	4	20,471	53·49	0·95
'02	311	27	19,481	15·96	1·38
'03	898	51	20,720	43·33	2·46
'04	1,501	12	22,684	66·16	0·52
'05	1,095	319	22,097	49·55	14·43
'06	721	361	19,847	36·32	18·18
'07	1,078	37	21,600	49·90	1·71
'08	1,687	126	21,291	79·23	5·91
'09	1,024	89	21,800	46·97	4·08
'10	3,138	181	24,620	127·45	7·35
'11	915	97	19,833	46·13	4·89
'12	1,943	77	21,198	91·65	3·63
'13	1,614	61	21,057	76·64	2·89
'14	2,810	139	26,569	105·76	5·23
'15	1,057	30	22,232	47·54	1·34
'16	2,427	270	24,436	99·32	11·04
'17	2,211	35	23,446	94·30	1·49
'18	1,884	492	26,523	71·03	18·54
'19	3,229	243	28,347	113·90	8·57
'20	1,440	213	25,454	56·57	8·36
'21	2,375	238	26,142	90·84	9·10
'22	2,167	114	25,750	84·15	4·42
'23	3,271	231	29,197	112·03	7·91
'24	1,227	118	25,952	47·39	4·54
'25	3,188	70	25,523	124·90	2·74
'26	1,519	256	29,647	52·92	8·63
'27	2,379	72	28,418	83·71	2·53
'28	2,105	82	27,810	75·69	2·94
'29	2,849	41	29,722	95·85	1·37
'30	1,914	311	26,761	71·52	11·62
'31	2,640	102	25,262	104·50	4·03
'32	1,197	30	23,358	51·24	1·28

TABLE I.—*Deaths from Small Pox, Measles, and all Causes—Contd.*

Years.	Deaths by			Ratio of Small Pox	Ratio of Measles
	Small Pox.	Measles.	All Causes.	to 1,000 Deaths from all Causes.	
1733	1,370	605	29,233	46·86	20·69
'34	2,688	20	26,062	103·13	0·76
'35	1,594	10	23,538	67·72	0·42
'36	3,014	169	27,581	109·27	6·12
'37	2,084	127	27,823	74·90	4·56
'38	1,590	216	25,825	61·56	8·36
'39	1,690	326	25,432	66·45	12·81
'40	2,725	46	30,811	88·44	1·48
'41	1,977	42	32,169	61·45	1·30
'42	1,429	981	27,483	51·99	35·69
'43	2,029	17	25,200	80·51	0·67
'44	1,633	5	20,606	79·24	0·24
'45	1,206	14	21,296	56·63	0·65
'46	3,236	250	28,157	114·92	8·87
'47	1,380	81	25,494	54·13	3·17
'48	1,789	10	23,869	74·95	0·41
'49	2,625	106	25,516	102·87	4·15
'50	1,229	321	23,727	52·64	13·52
'51	998	21	21,028	47·46	0·99
'52	3,538	111	20,485	172·71	5·41
'53	774	253	19,276	40·15	13·12
'54	2,359	12	22,696	103·93	0·52
'55	1,988	423	21,917	90·70	19·30
'56	1,608	156	20,872	77·04	7·42
'57	3,296	24	21,313	154·64	1·12
'58	1,273	696	17,576	72·42	39·59
'59	2,596	316	19,604	132·42	16·12
'60	2,187	175	19,830	110·28	8·82
'61	1,525	394	21,063	72·40	18·70
'62	2,743	122	26,326	104·19	4·63
'63	3,582	610	26,148	136·98	23·32
'64	2,382	65	23,202	102·66	2·80
'65	2,498	54	23,230	107·53	2·32
'66	2,334	482	23,911	97·61	20·15
'67	2,188	80	22,612	96·76	3·53
'68	3,028	409	23,639	128·09	17·30
'69	1,968	90	21,847	90·08	4·11
'70	1,986	325	22,434	88·52	14·48
'71	1,660	115	21,780	76·21	52·80
'72	3,992	211	26,053	15·32	8·09
'73	1,039	199	21,656	47·97	9·18
'74	2,479	121	20,884	118·70	5·79
'75	2,669	283	20,514	130·10	13·79
'76	1,728	153	19,048	90·71	8·03
'77	2,567	145	23,334	110·01	6·21
'78	1,425	388	20,399	69·85	19·02
'79	2,493	99	20,420	122·08	4·84
'80	871	272	20,517	42·45	13·25
'81	3,500	201	20,709	169·00	9·70
'82	636	170	17,918	35·49	9·48
'83	1,550	185	19,029	81·45	9·72
'84	1,759	29	17,828	98·66	1·62

TABLE I.—*Deaths from Small Pox, Measles, and all Causes—Contd.*

Years.	Deaths by			Ratio of Small Pox	Ratio of Measles
	Small Pox.	Measles.	All Causes.	to 1,000 Deaths from all Causes.	
1785	1,999	20	18,919	105·66	1·05
'86	1,210	793	20,454	59·15	38·76
'87	2,418	84	19,349	124·96	4·34
'88	1,101	55	19,697	55·89	2·79
'89	2,077	534	20,749	100·10	25·73
'90	1,617	119	18,038	89·64	6·59
'91	1,747	156	18,760	93·12	8·31
'92	1,568	450	20,213	77·57	22·26
'93	2,382	248	21,749	109·52	11·40
'94	1,913	172	19,241	99·42	8·93
'95	1,040	328	21,179	49·10	15·48
'96	3,548	307	19,288	183·94	15·91
'97	522	222	17,014	30·68	13·04
'98	2,337	196	18,155	128·72	10·79
'99	1,111	223	18,134	61·26	12·29
1800	2,409	395	23,068	104·43	17·12
'01	1,461	136	19,374	75·41	7·02
'02	1,579	559	19,379	81·99	28·48
'03	1,202	438	19,582	61·38	22·36
'04	622	619	17,034	36·50	36·33
'05	1,685	523	17,565	95·92	29·77
'06	1,158	530	17,938	64·55	29·54
'07	1,297	452	18,334	70·74	24·56
'08	1,169	1,386	19,954	58·58	69·45
'09	1,163	106	16,680	69·72	6·35
'10	1,198	1,031	19,893	60·22	51·82
'11	751	235	17,043	44·06	13·78
'12	1,287	427	18,295	70·34	23·33
'13	898	550	17,322	51·89	31·75
'14	638	817	19,283	33·08	42·36
'15	725	711	19,560	37·06	36·34
'16	653	1,106	20,316	32·14	54·43
'17	1,051	725	19,968	52·63	36·30
'18	421	728	19,705	21·36	36·94
'19	712	695	19,228	37·02	36·14
'20	792	720	19,348	40·93	37·21
'21	508	547	18,451	27·53	29·64
'22	604	712	18,865	32·01	37·74
'23	774	573	20,587	37·59	27·83
'24	725	966	20,237	35·82	17·73
'25	1,299	743	21,026	61·78	35·33
'26	503	774	20,758	24·23	37·28
'27	616	525	22,292	27·63	23·55
'28	598	736	21,709	27·54	33·90
'29	736	578	23,524	31·28	24·57
'30	627	479	21,645	28·97	22·12
'31	563	750	25,337	22·22	29·60
1841	1,053	973	45,507	23·11	21·38
'42	360	1,293	45,400	7·92	28·48
'43	438	1,442	48,718	8·99	29·60
'44	1,804	1,182	51,110	35·29	23·12

TABLE I.—*Deaths from Small Pox, Measles, and all Causes—Contd.*

Years.	Deaths by			Ratio of Small Pox	Ratio of Measles
	Small Pox.	Measles.	All Causes.	to 1,000 Deaths from all Causes.	
1845	909	2,318	48,318	18·81	47·97
'46	257	747	49,450	5·10	15·10
'47	955	1,778	59,131	16·15	30·06
'48	1,620	1,144	57,771	28·04	19·80
'49	521	1,154	68,755	7·57	16·78
'50	499	980	48,950	10·19	20·02
'51	1,062	1,297	55,488	19·13	23·37
'52	1,159	595	54,638	21·21	10·88
'53	211	978	60,069	3·51	16·28
'54	694	1,409	73,697	9·41	19·11
'55	1,039	878	61,942	16·77	14·17
'56	531	1,479	57,274	9·27	25·82
'57	156	1,341	59,103	2·63	22·68
'58	242	2,369	64,093	3·77	36·96
'59	1,158	1,330	61,860	18·55	21·50
'60	898	2,090	62,309	14·41	33·54
'61	217	1,062	65,251	3·32	16·27
'62	366	2,334	67,371	5·43	34·64
'63	1,996	1,634	71,060	28·08	22·99
'64	547	2,788	78,238	6·99	35·63
'65	640	1,290	73,531	8·70	17·53
'66	1,391	2,220	80,453	17·28	27·59
'67	1,345	1,143	70,924	18·96	16·11
'68	597	1,962	73,798	8·09	26·59
'69	275	1,456	78,082	3·52	18·65
'70	973	1,449	77,634	12·53	18·66
'71	7,912	1,427	80,430	98·37	17·74
'72	1,786	1,680	71,355	25·02	23·54
'73	113	2,149	75,459	1·49	28·47
'74	57	1,680	76,813	0·74	21·87
'75	46	1,408	81,964	0·56	17·17
'76	736	1,720	77,671	9·47	22·14
'77	2,551	2,387	77,449	32·93	30·82
'78	1,417	1,500	84,188	16·83	17·81
'79	450	2,475	83,805	5·36	29·53
'80	475	1,501	81,128	5·85	18·50
'81	2,371	2,533	81,071	29·24	31·25

TABLE II (APPENDIX).—*Maxima and Minima at Different Periods.*

	Maxima.	Minima.
For Periods of Thirty Years—		
1647–76	118	2·98
1702–31	127	16·00
'32–61	173	40·15
'62–91	169	15·32
1801–30	96	21·36
'41–70	35	2·63
For Periods of Forty Years—		
1647–86	124	2·98
1702–41	127	36·00
'42–81	173	15·00
1801–41 (thirty-one years)	96	21·36
'41–80 (forty years)	98	0·56
By Centuries—		
Seventeenth century (forty-eight years)	124	2·98
Eighteenth „ (one hundred „)	183	15·32
Nineteenth „ (eighty „)	98	0·56

TABLE II*.—*Small Pox and Measles in England*, 1852 *to* 1879 *inclusive.*

Years.	1 All Causes of Death.	2 Small Pox.	Ratio of 1 to 2.	3 Measles.	Ratio of 1 to 3.
1852	407,135	7,320	17·98	5,846	14·35
'53	421,097	3,151	7·48	4,895	11·62
'54	437,905	2,808	6·41	9,277	21·18
'55	425,703	2,525	5·93	7,354	17·27
'56	390,506	2,277	5·83	7,124	18·24
'57	419,815	3,936	9·37	5,969	14·19
'58	449,656	6,460	14·36	9,271	19·50
'59	440,781	3,848	8·73	9,548	21·66
'60	422,721	2,749	6·50	9,557	22·60
'61	435,114	1,320	3·03	9,055	20·81
'62	436,566	1,628	3·73	9,800	22·44
'63	473,837	5,964	12·58	11,349	23·95
'64	495,531	7,684	15·50	8,323	16·79
'65	490,909	6,411	13·06	8,562	17·44
'66	500,689	3,029	6·04	10,940	21·84
'67	471,073	2,513	5·33	6,588	13·98
'68	480,622	2,052	4·27	11,630	24·19
'69	494,828	1,565	3·16	10,309	20·83
'70	515,329	2,620	5·08	7,543	14·63
'71	514,879	23,126	44·91	9,293	18·04
'72	492,265	19,094	38·78	8,530	17·32
'73	492,520	2,364	4·79	7,403	15·03
'74	526,632	2,162	4·10	12,255	23·27
'75	546,453	950	1·73	6,173	11·39
'76	510,315	2,408	4·72	9,971	19·53
'77	500,496	4,278	8·54	9,045	18·07
'78	539,872	1,856	3·43	7,765	14·38
'79	526,255	536	1·02	9,185	17·46

TABLE III (APPENDIX).

Whooping Cough in London, from 1740 *to* 1831. (MARSHALL.)

Year.	Deaths by Whooping Cough.	Ratio.	Year.	Deaths by Whooping Cough.	Ratio.	Year.	Deaths by Whooping Cough.	Ratio.
1740....	280	9·09	1785	194	10·25	1830	552	25·50
'41....	100	3·10	'86	200	9·77	'31	1,738	68·59
'42....	122	4·48	'87	228	11·78			
'43....	92	3·07	'88	298	15·13			
'44....	46	2·23	'89	374	18·02	1841	2,278	50·05
'45....	135	6·34				'42	1,603	35·31
'46....	95	3·37	1790	391	25·00	'43	1,908	39·17
'47....	151	5·92	'91	279	14·87	'44	1,292	25·28
'48....	150	6·29	'92	311	15·38	'45	1,816	37·58
'49....	82	3·21	'93	352	16·19	'46	2,035	41·15
			'94	469	24·37	'47	1,600	27·05
1750....	55	2·32	'95	311	14·49	'48	1,630	28·21
'51....	275	13·08	'96	536	27·79	'49	2,349	34·16
'52....	188	9·17	'97	367	21·57			
'53....	65	3·37	'98	418	23·02	1850	1,568	32·03
'54....	336	14·80	'99	451	24·87	'51	2,185	39·37
'55....	93	4·24				'52	1,569	28·71
'56....	199	9·53	1800	380	16·47	'53 ...	2,667	44·39
'57....	239	11·25	'01	428	22·06	'54	2,502	33·95
'58....	84	4·78	'02	1,004	51·81	'55	2,438	39·36
'59....	227	11·58	'03	586	39·92	'56	2,092	36·52
			'04	697	40·90	'57	2,527	42·75
1760....	414	22·88	'05	703	40·05	'58	2,708	42·25
'61....	197	9·35	'06	623	34·72	'59	1,742	28 16
'62....	300	8·26	'07	439	23·94			
'63....	291	11·13	'08	326	16·33	1860	2,067	33·17
'64....	251	10·82	'09	591	35·43	'61	3,548	54·37
'65....	225	9·68				'62	2,168	32·18
'66....	213	9·99	1810	449	22·57	'63	2,175	30·61
'67....	364	16·10	'11	486	28·51	'64	2,423	30·97
'68....	262	11·09	'12	508	27·77	'65	2,935	40·59
'69....	318	14·56	'13	389	22·45	'66	2,960	36·69
			'14	864	44·80	'67	2,278	32·12
1770....	218	9·69	'15	729	37·27	'68	2,338	48·27
'71....	249	11·43	'16	666	32·78	'69	3,769	25·19
'72....	385	14·77	'17	645	32·30			
'73....	234	10·80	'18	839	43·58	1870 ...	1,956	25·19
'74....	554	26·04	'19	750	38·88	'71	2,291	28·48
'75....	224	10·92				'72	3,259	45·67
'76....	187	9·81	1820	794	41·04	'73	2,620	34·72
'77....	536	22·97	'21	614	33·27	'74	1,867	24·30
'78....	381	18·67	'22	757	40·12	'75	3,204	39·09
'79....	268	13·12	'23	799	38·81	'76	2,737	36·52
			'24	627	30·99	'77	1,817	23·43
1780....	578	2·82	'25	420	19·97	'78	4,483	53·25
'81....	165	7·96	'26	674	32·47	'79	2,934	35·01
'82....	78	4·35	'27	767	34·41			
'83....	268	14·08	'28	717	33·03	1880	3,516	42·96
'84....	467	26·19	'29	633	26·90	'81	1,961	24·18

Table IV (Appendix).

	Deaths by Small Pox to 100,000 Deaths by all Causes in London.	Deaths to 100,000 Living.	
		Small Pox.	Measles.
1841	2,311	56	52
'42	792	19	67
'43	809	22	74
'44	3,529	89	58
'45	1,881	44	112
'46	510	12	35
'47	1,615	43	81
'48	2,804	72	51
'49	757	23	50
1850	1,019	21	42
'51	1,913	45	55
'52	2,121	48	25
'53	351	9	40
'54	941	28	56
'55	1,677	41	34
'56	927	20	57
'57	263	6	51
'58	377	9	88
'59	1,855	42	49
1860	1,441	32	75
'61	332	8	38
'62	543	13	82
'63	2,808	69	56
'64	699	19	95
'65	870	21	43
'66	1,728	46	73
'67	1,896	44	37
'68	809	19	63
'69	352	9	46
1870	1,253	30	45
'71	9,837	242	44
'72	2,502	54	50
'73	149	3	64
'74	74	2	49
'75	56	1	40
'76	947	21	48
'77	3,293	71	66
'78	1,683	39	41
'79	536	12	67
1880	585	12	40
'81	2,924	62	66

Discussion *on* Dr. Guy's Paper.

Mr. C. Walford said, that some years ago he was ambitious enough to try to collect the figures relating to small pox mortality from an early period, for the whole kingdom. He, however, found it impossible to carry out his object, because the necessary records did not exist. Dr. Guy had made out a presentable and an overwhelming case with regard to London at all events. He had felt some difficulty as to what explanation would be given of the last outbreak of small pox, and although Dr. Guy's solution was somewhat startling, it appeared to be the true one. No other fact in connection with medicine was so striking as the constant and steady reduction of the deaths from small pox since the general introduction of vaccination. Mr. Griffiths Davies had authoritatively stated in the early part of the present century that the duration of human life in Great Britain had been increased by some four years during the past century and a half. He had tried to ascertain by what process of reasoning, and from what facts that strong assertion had been arrived at. The only light that he could ever throw upon it was this, that by means of vaccination there had been an obvious increase of the duration of human life. Small pox used to attack in a special degree young persons. That state of things was remedied, and he thought that at least two years' increased duration of life to the entire community might be accounted for in that way. What the other circumstances were which justified the statement about four years, he had not been able to discover. It may have been improved medical treatment. Dr. Guy had made it clear that sanitary improvements did not account for any great diminution of the deaths from small pox and epidemic diseases generally; and Dr. Parkin had broadly asserted that such improvements had actually done nothing to increase the duration of life; that mephitic vapours from time to time arose from the earth, carrying desolation and death with them. He would like to hear how any gentleman could make a presentable answer to the case so strongly put by Dr. Guy.

Mr. White observed that small pox began to decline in London before any sanitary reforms were operative. He also referred to Mr. Cross's book on the great epidemic of small pox in Norwich in 1819, where it would be found that years passed over that city without any small pox, and he believed the same was true of many other parts of England. Mr. White further attached importance to the change that had taken place in the diet of the people, which had directly and indirectly affected the health of children, who are the chief victims of small pox.

Mr. Baker drew attention to the less satisfactory character of the statistical returns prior to 1841, when compared with those subsequent to that date, quoting Dr. Farr as his authority. The speaker suggested that vaccination, by impairing the health of the children on whom it was practised, prepared them to suffer more severely by other diseases, for instance, by measles; and he thought

that the large outlay on sanitary measures must have largely economised life. The improvements in the dwellings of the poor must have exercised a special influence for good.

Mr. Baden-Powell said, that in the period under review, the population of London had quadrupled itself. During the same time means of communication had increased, and the people moved to and fro with much greater frequency than ever before. This seemed to bear very strongly upon the point that measles and whooping cough had increased, while small pox had decreased in recent years. The increased communication among a much greater population, gave an increased value to the results of vaccination.

Dr. Kidd said that the army was a revaccinated population, and there small pox was a disease of very rare occurrence. In 1880 there were only twenty cases of small pox and two deaths in the whole British army all the world over. He could recall no instance in which revaccination had led to serious injurious results.

Mr. Collings agreed with Mr. Baker as to the importance of sanitary measures, specifying particularly isolation and improved dwellings; and as proof of the efficacy of isolation, quoted Dr. Hogarth. In the last century, by a system of complete isolation carried out at Chester the small pox mortality was reduced to one-fifth without any vaccination whatever.

Mr. Frederick Hendriks said that the open question whether the introduction of vaccination had really increased the longevity of mankind in general during the last half century, was a very difficult one to solve in an actuarial manner, firstly, because of the evidence which tended to show that other diseases, particularly at young ages, had taken the place of small pox in destroying a large number of lives; and, secondly, because in a question of this kind it was of primary necessity to have statistics of deaths arranged according to the ages of the population, and none such existed for comparison as regards the last century or the preceding one. Mathematicians, as well as doctors, had discussed a similar question as to the improvement of longevity by the diminution of small pox before vaccination was introduced, indeed soon after the adoption of inoculation. So far back as in 1760, Daniel Bernoulli contributed a paper to the Transactions of the Paris Academy of Sciences, in which he endeavoured to show that something like three years were added to the average longevity of mankind in places where inoculation was resorted to. Bernoulli's views were immediately combated by no less a personage than Dalembert, who considered that the deduction was based on insufficient grounds. Bernoulli's conclusions were however very much strengthened by the later investigations published by Duvillard at Paris in 1806, in the form of an elaborate mathematical analysis of the influence of small pox at each age, and of the effect such a preservative as vaccination may have upon population and longevity. The subsequent researches of the English actuary, Milne, published in 1815, respecting the Carlisle mortality, gave rather a greater importance than Bernoulli and Duvillard had assigned to the extension of life consequent upon the diminution of small pox. Looking at Dr. Guy's figures presented to the Society that evening, it was certainly most

interesting to see that the deaths from small pox, in proportion to the deaths from all causes in London, had been reduced to one-fifth of the ratio they similarly bore to deaths from all causes one hundred years ago. The results during the last century in Sweden had even been more startling than this, as the population there was in a preponderating degree a rural one. The ratio borne to deaths from all causes by the small pox deaths in Sweden had diminished to one-tenth of what they were a century ago. He (Mr. Hendriks) might perhaps be permitted to refer upon this point to his paper on the "Vital Statistics of Sweden," which was read to the Society in January, 1862. It was not, however, to be assumed as at all proved that the general longevity of Swedish lives had improved to a marked extent throughout every age. At all ages of males above 40, there had positively been an increased mortality at the end, as compared with the commencement, of the period of one hundred years, as there tabulated with minuteness at every age. Dr. Guy had in his excellent paper contributed information in a form most useful for future study and comparison; and as the small pox question affected the lives of mankind more at infantile and younger stages than at mature and advanced ages, it was most important to have such a collection of data as Dr. Guy had so carefully brought before the Society, of the deaths in London from measles and whooping cough, the increase of which seemed to some extent to have followed with, and taken the place of, the decrease of deaths from small pox at the younger stages of life, and so as to very much complicate the satisfactory solution of the question as to how much vaccination had increased average longevity in London or elsewhere.

Professor Corfield said it was quite impossible to account in any ordinary way for the enormous diminution in the small pox mortality during the present century, either by any change of diet, or by the slight improvement in sanitary arrangements. Any medical officer of health, if asked what disease he would compare small pox to, as regards its methods of prevention or spread, would compare it to scarlet fever or measles, and not to typhoid fever, which was a disease that could be prevented, and which would as surely be abolished as typhus had been to so great an extent by the improvements in the sanitary arrangements of houses. He agreed with previous speakers that more time was required to consider the paper and to thoroughly appreciate the figures in all their bearings, so as to be able to discuss them effectually. He very much regretted that it was not possible to have another meeting for the discussion. He wished to draw attention to the very remarkable facts in Table XV, which showed that between 1866 and 1876 there were years when the mortality from small pox went altogether below anything that had ever happened before. If the mortality of the epidemic of 1871 was 98 out of 100,000, it appeared that the mortality in 1873-75 was so low as to be entirely unprecedented in the history of mankind as to which there were any statistics. He wished to amplify what the last speaker had said about the small pox mortality in Sweden. During the sixty-one years before the introduction of vaccination into that country, the number of years

in which the deaths from small pox was over 10,000 was nine; while in only one year were the deaths under 1,000. In that particular year they were 671. During the sixty-three years after the introduction of vaccination, there were forty-eight years in which the deaths were under 1,000, and no year in which they reached even 3,000; while in one year their mortality was only *two* for the whole kingdom. Figures taken in this broad way showed the enormous change that had taken place. To account for this it was no use looking to such small things as change in diet, or even improvements in sanitary arrangements, especially while these had not been accompanied by any decrease in the mortality of similar diseases.

Mr. R. Lawson said there could be no doubt that the bills of mortality before 1837 possessed an authority far less than the statistics which Dr. Farr was so active in obtaining. Captain Graunt described them as being confined to the persons in communion with the Established Church: but upon the principle that the same relative proportion of deaths from different diseases took place among a portion of the population as among the whole, they were good for many purposes. Taking the five years before 1766 and the five after, the deaths from small pox in London as given in Captain Graunt's paper, were 2 per 1,000 annually; while taking ten years before and ten years after, the ratio was $2\frac{1}{2}$ per 1,000. Coming down to 1777, and taking five years before and five years after, the annual mortality was 3·6 per 1,000. Treating the years before and after 1801 in the same way, the ratio was reduced to 1·8 per 1,000. From 1841 to 1880, notwithstanding the severe epidemic of 1871, the average mortality was only 0·35 per 1,000. In the epidemic of 1659, the mortality was 3·8 per 1,000; in 1661, 3·1; in 1772, 6·24; in 1781, 5·47; the mean of the last two being 5·9. In the present century, the two most severe epidemics were in 1838, when the mortality in London was 2·2 per 1,000, and in 1871, when it was 2·4. This latter epidemic caused a mortality in Liverpool of 3·73 per 1,000; while in Amsterdam, Rotterdam, the Hague, and Utrecht, with a population of 558,000 there were 5,636 deaths, or a ratio of 10 per 1,000. If the mortality in London had been on the same scale, there would have been 32,270 deaths instead of 7,912; and in Liverpool there would have been 5,871 deaths instead of 2,162. As Dr. Guy had pointed out, it seemed there was something in the air which determined the virulence of small pox. The epidemic in 1871 could be traced to the Madras Presidency in 1868: it was in the northern part of India in 1869; in the Mediterranean and the South of France early in 1870; and traces of it were found in Holland, Germany, Sweden, and Scotland, before the siege of Paris, to which many persons ascribed it. As Dr. Guy very justly said, vaccination appeared to be sufficient to keep small pox in check for the time being, but every now and then a major force overpowered it to a variable extent, giving rise to epidemics; but even during these the beneficial influence of vaccination is obvious, as shown by the smaller mortality in London and Liverpool than in the Dutch towns where vaccination was much less general.

Mr. Bourne said he had been informed by a medical friend that even when vaccination did not entirely protect, it often so far modified the influence of the disease when it was taken, that the sufferer was not even acquainted with the actual nature of the disease from which he suffered, and therefore did not take the necessary measures for isolation. The disease might thus be communicated by persons who did not know that they were capable of carrying the infection to others. With regard to sanitary improvements, they must not always expect even good measures to show an immediate result in the diminution of sufferers from the evils against which they were directed, because concurrently with them there were often other causes in existence which but for the remedial measures would have vastly increased these evils. Such was the extensive increase in the consumption of alcoholic liquors, which had tended not only to deteriorate the health of those who gave way to it, but at the same time had brought about moral reasons why such persons were not so well guarded against the dissemination of disease, and the protection of those under their care as they otherwise would have been.

Mr. William Bugby also attached importance to sanitary measures, to abstinence from alcoholic liquors, to improved medical treatment, and to the "stamping out" of disease.

Mr. Giffen said, that as a statistician he considered that Dr. Guy's case amounted almost to demonstration. A great many of the arguments which had been used to show that some other cause than vaccination might have possibly contributed to the great diminution of disease in the present century, were quite irrelevant to the question. For instance, with regard to the change of diet, it was altogether overlooked that Dr. Guy did not take one disease only, but also another disease of the same character. How was it then that the change of food had not operated in both cases alike. The remark applied also to improved medical treatment; there was no reason why that improvement should not have operated in the case of measles as much as in small pox, yet no such diminution was shown in the mortality from measles as in that from small pox. The same observation applied to isolation. The Society were altogether much indebted to Dr. Guy for his paper.

Dr. Guy in reply, said that the returns he had collected for the entire kingdom, showed that the ratios of deaths by small pox to deaths by all causes throughout the country, were as nearly as possible half those that obtained in London. Alluding to sanitary reforms and their effects, he said it was quite true that they had not yet made that impression upon the mortuary returns which might reasonably have been expected; but it should be borne in mind that the constant increase of our urban populations was a circumstance warring against the health of the whole people, and acting in a direction opposite to that of sanitary reforms and improvements. The more the populations of towns increased, especially where the Irish formed a considerable element, the more did sickness and mortality, as had been shown by Professor Jevons, increase. He did not deny that dietary changes had something to do with the health of the people, but it was quite wrong to suppose,

as one of the speakers had done, that the end of the eighteenth century was the dividing line between a more and a less healthy diet. He gave every possible credit to what Dr. Farr had said, of the comparatively unsatisfactory character of our statistics prior to the Registration Act, but a certain importance certainly did attach to statistical returns prior to this century, for they were collected in the same way, though by less competent persons, and were governed by the same law of error or ignorance. He (Dr. Guy) had not said that small pox was not influenced by sanitary reforms, but that other diseases, such as measles, whooping cough, diarrhœa, and fever were presumably influenced to the same extent. With regard to the assertion that vaccination lowered vitality, that was scarcely a subject for discussion before that Society. It was better suited to a meeting of medical men, and there was nothing in his paper to give rise to the question; all he could say was, that he did not believe it. No doubt revaccination in grown up persons did sometimes produce very serious local consequences, but this he believed happened chiefly to persons revaccinated in an epidemic year, when both small pox and vaccination were rendered more severe by the conditions of the atmosphere which caused the epidemic. As to improved dwellings, there could be no doubt that they had saved many lives and added enormously to the comfort, and to some extent also, to the vitality of the people; but that fact did not touch the question before the meeting in any way whatever. He agreed with Mr. Baden Powell that the more dense the population the greater the mortality. Dr. Kidd had made some valuable statements with respect to revaccination in the army, and no doubt the chairman could confirm what had been said on that point. To return to sanitary reforms and improvements, it was obvious that they must have affected all the diseases given in the tables he had submitted, and yet the reduction in the case of small pox was at least ten times as great as that in any other of those diseases. Again, what had been stated with regard to isolation, applied equally to all those diseases. He received the observations made by Dr. Corfield with all the respect due to that gentleman's official position and the attention he had paid to the subject, and what he had said had strengthened the statements made in the paper. The comparisons too, made by Mr. Lawson, all tended to confirm them. The medical man whom Mr. Bourne quoted, might be right in supposing that there were cases in which vaccination had really prevented small pox, where the patient was in a condition to communicate it to others, might go about feeling some indisposition, but being unconscious that that was due to an attack of small pox. The abuse of alcohol might also conduce to the taking small pox, and no doubt improvement in medical treatment should be taken into account. But these suggestions, and many others brought forward in the course of the discussion, Dr. Guy said scarcely grew out of the facts and figures brought forward in his paper.

The Chairman in proposing a vote of thanks to Dr. Guy, said he quite agreed with the views expressed in the paper as to the valuable effects of vaccination as a prophylacteric, and by Dr. Kidd as to the good results of revaccination in the army.

The Relative Mortality, *after* Amputations, *of* Large *and* Small Hospitals, *and the* Influence *of the* Antiseptic (Listerian) System *upon such* Mortality.* *By* Henry C. Burdett, Esq.

[Read before the Statistical Society, 16th May, 1882.]

[Mr. Burdett said: I was asked to-night by a medical friend as I was coming to this meeting, why it was that I selected the Statistical Society to read a Paper affecting the relative mortality of hospitals. I think that is a fair question, and one which I ought to answer. My reason is that long experience of hospital management has led me to the conclusion that the laymen, who we must remember constitute by far the larger number of those who are engaged in hospital administration, pay far too little attention to sanitary subjects, and realise far too little the importance of the hygienic surroundings, and the general habit—if I may use that word—of hospitals and hospital wards. I therefore believe and hope that by submitting this paper to the Statistical Society, I shall not only attract to it the attention of the medical profession, which has already indirectly been directed to this subject through the medical press, but that I shall reach a wider audience, and possibly some at least of those earnest laymen who devote so much time and attention to the wise administration of our hospitals, and that thus I may in some way aid the medical profession by directing the attention of such laymen to the important questions with which I am about to deal.]

Probably no question has been more keenly contested than the one which constitutes the heading of this paper. Ever since Sir James Simpson published his famous essay on the subject the controversy has continued, and the disputants on either side have held to their opinions often with considerable warmth. In fact, the discussion of the relative mortality of large and small hospitals has generated more heat at times than can be easily accounted for.

* The operations tabulated in this Paper comprise all that are recorded in the Cottage Hospital Case Books from the date of their foundation to the end of the year 1878, a period of twenty years.

The accuracy of Sir James Simpson's statistics of the results of amputations in country and private practice has been seriously impugned by Callender, Holmes, and other authorities, owing to the impossibility of proving the reliability of the sources from which they were derived, and because no details of the cases were given.

Feeling deeply the importance of the subject, it seemed to me of interest to collect actual figures, which could be definitely verified from the books kept by the medical staff of the different hospitals; and with this view a circular was despatched to 160 cottage hospitals, in the following terms:—

"The relative success of the graver operations in surgery as "performed, first, in large town hospitals, and, secondly in country "cottage hospitals, has for years attracted much attention, and "there is reason to believe that the mortality in cottage hospitals in "the major operations is much less than in the London hospitals. "With a view of setting this question at rest, and of proving the "truth or fallacy of Sir James Simpson's theory, I shall feel "deeply obliged if you will fill up the enclosed form* with the "results of all the amputations which you may have had in connec-"tion with your cottage hospital since it was first opened.

"However few may be the amputations of the limbs, an exact "return from every cottage hospital will be regarded as a very "valuable contribution to surgical statistics."

Answers were received in reply from ninety-two cottage hospitals, into thirty-one of which no cases requiring amputations had been received, although the majority had had, in addition to severe fractures, cases of herniotomy, lithotomy, extirpation of eyeball, removal of bone for necrosis, ovariotomy, excisions of knee, ankle, shoulder and breast, or other surgical cases of interest.

The cases of amputation in the sixty-one hospitals, which are given in alphabetical order in the following table, amount to 326, or nineteen more than the number given by Professor Erichsen in his book, as "all the amputations which have been performed in "his wards at University College Hospital from the foundation of "the hospital, a period of thirty-eight years." The average mortality in Professor Erichsen's cases was 25 per cent., while it amounted to a little over 17 at these cottage hospitals.

* See Appendix A.

Table of Amputations and their Results, Primary or for Injury, and Secondary or for Disease, of the Thigh, Leg, Arm, and Forearm, performed in Cottage Hospital Practice by Country and Provincial Practitioners.

Nominal List of Cottage Hospitals.	Number of Beds.	Primary.								Secondary.								Total.	
		Thighs.		Legs.		Arms.		Forearms.		Thighs.		Legs.		Arms.		Forearms.		C.	D.
		C.*	D†	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D		
Ashford	6	1	1	5	1	–	–	2	–	2	–	–	–	–	–	–	–	10	2
Beccles	7	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Bournemouth	6	–	–	1	–	2	–	–	–	–	–	–	–	–	–	–	–	3	–
Burton-on-the-Water	8	1	1	–	–	2	–	1	–	–	–	–	–	1	–	1	–	5	1
Burford	6	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	2	–
Bromley	10	–	–	–	–	1	–	–	–	1	1	–	–	–	–	1	–	3	1
Boston	5	1	–	1	–	2	1	1	1	–	–	–	–	–	–	–	–	5	2
Buckhurst Hill	7	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	1	1
Bromyard	5	–	–	–	–	–	–	1	–	–	–	2	–	–	–	–	–	3	–
Crewkerne	12	1	1	1	1	3	–	2	–	–	–	–	–	–	–	–	–	7	2
Cromer	6	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Chesham	7	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Cranleigh	6	1	–	–	–	–	–	1	1	3	–	–	–	2	–	–	–	7	1
Cirencester	6	–	–	–	–	–	–	1	–	4	–	–	–	1	–	–	–	6	1
Charlwood	4	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Dorking	12	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	2	–
Enfield	6	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–
Erith	7	–	–	–	–	–	–	–	–	1	–	2	–	–	–	–	–	3	–
Fairford	8	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
Fowey	8	1	–	1	–	–	–	–	–	–	–	3	–	–	–	–	–	5	–
Frome	10	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–
Hayes	5	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
Hillingdon	4	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–
Hatfield Broad Oak	8	–	–	–	–	–	–	1	–	1	1	–	–	–	–	–	–	2	1
Jarrow-on-Tyne	11	3	2	6	1	2	–	–	–	–	–	–	–	–	–	–	–	11	3
Iver	7	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	2	–
Kendal	16	–	–	–	–	1	1	1	–	3	1	3	–	1	–	–	–	9	2
Ledbury	5	–	–	1	–	2	–	–	–	1	–	–	–	–	–	1	–	5	–
Lloyd (Bridlington)	13	–	–	2	–	–	–	–	–	3	1	–	–	–	–	–	–	5	1
Litcham	7	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Marlborough (Savernake)	20	3	–	4	–	2	–	1	–	1	–	–	–	1	–	1	–	13	–
Mildenhall	8	3	2	2	–	1	–	–	–	2	–	–	–	1	–	–	–	9	2
Malvern	12	–	–	2	–	–	–	–	–	5	–	3	–	–	–	–	–	10	–
Market Rasen	4	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Milton Abbas	6	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1	–
Melksham	6	1	1	–	–	–	–	1	–	–	–	–	–	–	–	–	–	2	1
Newton Abbot	8	–	–	–	–	2	1	–	–	–	–	–	–	–	–	–	–	2	1
North Cambridgeshire	23	–	–	–	–	1	–	–	–	2	1	–	–	–	–	–	–	3	1
North Lonsdale	50	5	4	10	–	8	1	–	–	–	–	1	–	–	–	–	–	24	5
Ottery St. Mary	7	–	–	1	–	–	–	3	–	2	–	1	1	1	–	–	–	8	1
Oswestry	8	2	–	2	–	3	1	2	–	–	–	–	–	–	–	–	–	9	1
Petworth	8	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	1	1
Petersfield	6	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Penrhyn	13	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–
Ross	6	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	2	–
Royston	7	1	1	–	–	1	–	–	–	3	–	3	1	–	–	3	–	11	2
Reigate and Redhill	12	–	–	1	1	2	–	1	–	1	1	2	–	–	–	–	–	7	2
Rugeley	10	1	1	2	1	–	–	1	–	2	1	–	–	–	–	–	–	6	3
Ross Memorial (Dingwall)	4	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
Ruabon	6	1	1	4	–	–	–	–	–	–	–	–	–	1	–	–	–	6	1
Stockton-on-Tees	9	1	–	23	7	7	1	5	–	2	1	2	1	–	–	–	–	40	10
St. Albans	7	1	1	2	–	–	–	3	–	1	–	–	–	–	–	–	–	7	1
Seacombe	8	1	1	1	1	–	–	–	–	–	–	–	–	2	–	–	–	4	2
Stratton (Cornwall)	5	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	–
St. Leonards (Sudbury)	20	2	1	–	–	2	–	2	–	2	–	1	–	–	–	1	–	10	1
St. Mary's (Burford Tenbury)	8	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–
Tewkesbury	9	1	1	5	–	4	–	5	–	6	–	5	–	–	–	–	–	26	1
Trowbridge	8	–	–	–	–	–	–	3	1	–	–	1	–	–	–	–	–	4	1
Ulverston	12	2	1	2	1	–	–	2	–	1	–	–	–	–	–	–	–	7	2
Warminster	7	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–
Wickham	6	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
	551	36	21	82	15	55	7	47	3	54	9	32	3	11	–	9	–	326	58

* C. cases. † D. deaths.

To facilitate comparison, the following summary of the above table has been prepared on the plan adopted by Sir James Simpson:—

1. *Total mortality of all amputations in sixty-one cottage hospitals, having a total of* 553 *beds.*

Total number of cases, 326.
„ deaths, 58.
Or 1 in every 5·6 died; or 17 in every 100.

2. *Mortality of the individual amputations.*

When we include all the amputations of the thigh, leg, arm, and forearm, the results are:—

Thigh	cases	90;	deaths	30;	or 1 in	3	; or 33·3	per cent.
Leg	„	114;	„	18;	„	6·3;	„ 15·5	„
Arm	„	66;	„	7;	„	9·4;	„ 10·6	„
Forearm	„	56;	„	3;	„	18·6;	„ 5·4	„

3. *Mortality from the amputations that were primary or for injury.*

Thigh	cases	36;	deaths	21;	or 1 in	1·7;	or 58	per cent.
Leg	„	82;	„	15;	„	5·5;	„ 18	„
Arm	„	55;	„	7;	„	6·6;	„ 15	„
Forearm	„	47;	„	3;	„	15·6;	„ 6·4	„

4. *Mortality from the amputations that were secondary or for disease.*

Thigh	cases	54;	deaths	9;	or 1 in	6	; or 16·6	per cent.
Leg	„	32;	„	3;	„	10·7;	„ 9	„
Arm	„	11;	„	*nil.*				
Forearm	„	9;	„	*nil.*				

These tables will be incomplete unless the cause of death in each case is recorded. Thus, in the primary amputations for injury:—

Of the thigh cases—13 died from shock.
1 „ pyæmia.
1 „ enteritis.
1 „ inflammation of lungs.
1 „ delirium tremens.

In the remaining case—a compound fracture just above the knee, with destruction of the femoral artery, not detected at the time of reduction,—mortification of the limb set in, and amputation was performed as the last resource.

Of the leg cases—6 died from shock.
3 „ pyæmia.
1 „ tetanus.
1 „ delirium tremens.
1 „ pneumonia.
3 „ not stated.

Of the arm cases—4 died from shock.
1 „ pneumonia.
1 „ tetanus.
1 „ not stated.

Of the forearm cases—2 died from shock.
1 „ tetanus.

In the secondary amputations for disease:—

Of the thigh cases—3 died from exhaustion.
2 „ secondary hæmorrhage.
1 „ shock.
1 „ pyæmia.
2 „ not stated.

Of the leg cases—2 died from exhaustion.
1 „ not stated.

The cases in which the cause of death is not stated were treated at the Stockton Hospital, the books of which give no information on the point. Of the five cases of pyæmia, two occurred at Stockton, one at Crewkerne, one at Ashford, and one at the Lloyd Cottage Hospitals.

It will be observed that the great mortality in the primary amputation of the thigh is due to the fact that four-fifths (17) of the deaths were caused by shock, consequent upon the severe injuries which the patients had sustained.

I have shown in the above table that the mortality after amputations in cottage hospital practice, in hospitals having 553 beds, is 17 per cent. In four leading metropolitan hospitals, containing upwards of 1,800 beds, Professor Erichsen* shows the mortality, after operations, to have been 37·8 per cent. The mortality in the Parisian hospitals,† as given by Malgaigne and Husson, Holmes and Bristowe, amounts to 60 per cent. Billroth‡ gives the mortality at Zurich, between the years 1860 and 1867, as 46 per cent. Sir James Simpson§ gives the mortality in town hospitals after these cases as 41·6 per cent.; at the Edinburgh

* "On Hospitalism," p. 20. Longmans, 1874.
† Ibid., p. 11.
‡ Billroth, "Chirurgische." Klinik, Zurich, 1866-67.
§ Simpson's Works, vol. ii, pp. 280–400; Article "Hospitalism."

Infirmary as 43·3 per cent.; at the Glasgow Infirmary as 39·1 per cent.; at St. Bartholomew's Hospital as 36·6 per cent.; at the London Hospital, Whitechapel, as 47·3 per cent.; at Guy's Hospital as 38·2 per cent.; and at St. George's Hospital 38·8 per cent. These statistics were brought down to the year 1868, and, as Professor Erichsen* truly says, "the accuracy of Sir James Simpson's "statistics relating to hospital practice has been admitted by all, "even by his most determined opponents, for they have been "derived from statistical returns furnished to him by the surgeons "and registrars of the various hospitals to which they relate." In the result the lowest mortality in any of the metropolitan hospitals referred to by Sir James Simpson is 34·4 per cent., the highest 47·3 per cent.; whereas the cottage hospitals show an average mortality of but 17 per cent.

When I began to collect materials for this paper, in 1876-77, I thought it would suffice to publish the foregoing tables and remarks. I was soon, however, undeceived. Certain critics threw doubts upon the value of my tables and statistics, on the ground that they were figures and figures only.

It was argued that the question at issue was mis-stated by me. Objection was taken to my figures, as to Simpson's, because they are unaccompanied by "any facts, any particulars of the "cases, and are therefore susceptible of any number of different "interpretations besides the one which Simpson chose to select, "viz., that there is an inherent unhealthiness in large hospitals, "which he described by the term 'hospitalism.'" It was alleged that the difference in favour of cottage hospitals of 7 per cent. in the number of deaths after amputations of the limbs, "may as "easily have depended upon difference in the surgical practice, in "the vitality (from age, state of health, &c.) of the patients, or on "the previous condition of disease or injury, or in fact on any "conceivable combination of these, and very possibly of other "causes, as on a difference in the healthiness of the hospitals." One critic, in fact, congratulated the large hospitals on the fact that a difference in mortality of 7 per cent. "proves that the intrinsic "danger of operations in cottage or in large hospitals cannot be "great." As to this, it is only to be observed that a death-rate of 70 per 1,000 in any community would hardly be regarded as a trifle, even by the most indifferent of sanitarians. After regretting "the absence of any attempt to estimate the real sanitary condition "of cottage hospitals as tested by the prevalence and spread of "erysipelas in these institutions," the same critic observed:—

"Every one knows by this time how inferior the arrangements

* "On Hospitalism," p. 10. Longmans, 1874.

" for nursing, cleanliness, and ventilation in cottage hospitals are " to those of our great city hospitals." This last statement is made by a gentleman who holds a deservedly high place amongst metropolitan surgeons. It is so entirely imaginary and contrary to the fact, that I must ask him to unreservedly withdraw it. Before doing so I should wish him to visit such hospitals as Cranleigh, Boston, Grantham, Petersfield, Reigate, Savernake, situated as they are in different parts of the country, and ministering as they do to the wants of agricultural and urban populations. He will then feel compelled to admit he has inadvertently been led to make a charge of bad management against these crisply conducted little hospitals which has no foundation in fact. Whatever sins may be laid to the charge of cottage hospitals, they are certainly not filthy, badly nursed, or ill ventilated. Taking the average, in all these respects, the arrangements are, if anything, more perfect than in the majority of the larger hospitals throughout the country.

I am not disposed to quarrel with my critics for taking me to task because I have given figures, and not a history of all the cases contained in the tables. But in this, as in other things, it is easier to criticise than to remedy the omissions complained of. The labour of abstracting some 400 cases from the hospital books, of condensing and codifying the facts, and of classifying the information so as to reduce it to reasonable but intelligible limits, is not considered. Add to the foregoing that the facts have to be collected from at least sixty different places scattered all over the kingdom, and even the most exacting of critics will see cause to be lenient in his judgment. With the view, however, of giving information on the points referred to, I have taken out the following facts and figures, which supply all the information demanded by the statisticians I have quoted. Every case given in these tables has been accurately recorded. I have full notes of the cases in my possession, and the detailed information there given is at the disposal of any one who may care to study it. It will be seen that the results are more favourable to the cottage hospitals than those given in the original tables, and that the charge of " want of surgical boldness " (*i.e.*, refraining from amputation in cases which would not be allowed to die in metropolitan hospitals without amputation) is not borne out by the facts. This is creditable to all concerned, and adds weight to the conviction—a conviction which is spreading amongst the well-to-do classes in country districts—that if they have to undergo an operation, it is as safe, and on the whole more desirable to have it performed at their own houses by the cottage hospital surgeon than to submit to the discomforts and risks of a London lodging house, where the case

can be placed in charge of one of the more notable surgeons of a large hospital.

In this connection I have made it my business to visit many of the newly erected cottage hospitals. It is now a quarter of a century since the first cottage hospital was opened, and the older hospitals are beginning to desire to "dabble in bricks and "mortar." My observations lead me to fear that at present these new hospitals are worse for the patients than the old cottages. The former had no system of direct drainage; the latter have a system of their own. So far as my observations have gone, I have found *the sanitary arrangements of every new cottage hospital faulty*, with one solitary exception, the Grantham District Hospital. As a matter of fact, the change from the old to the new buildings constitutes a danger to the health of the patients, for sewer gas is directly laid on to the latter, whereas earth closets or the old fashioned outside privies were probably used at the former. Architects, almost without exception, display a fatal ignorance of the most rudimentary principles of sanitary construction. Only recently a new cottage hospital was built, and the patients transferred from the old cottage, which had done good service for nearly twenty years. In this case, as usual, the closets were placed inside and in the centre of the hospital. The soil pipes were unventilated, and were directly connected with the cesspool, and many of the drains ran beneath, instead of outside, the hospital. No care in dressings, and no amount of watchfulness on the part of the medical attendant or the nurse, will prevent an outbreak of erysipelas or of something worse if the sanitary arrangements remain as I found them. The history of the new St. Thomas's Hospital and of the Leeds Infirmary proves how soon structural defects will produce septic mischief. In the new clinic of Professor Volkmann, of Halle, in Germany, though built with the utmost care, cases of cellulitis occurred within six months of the day on which it was opened. Structurally perfect, it was hygienically incomplete and unsatisfactory. Unless the cottage hospital managers set themselves steadily to work to stop this grave danger, they had best rest content with the old cottage as it is. If many fresh hospitals are built on the present bad system of construction, the mortality of cottage hospitals will, in my opinion, very soon exceed that of the larger general hospitals. Before any more new cottage hospitals are built, the staff should insist upon the plans being submitted to some competent sanitarian for his advice and counsel.

The following tables are compiled from information supplied by forty-four cottage hospitals. At very many (some sixty) others no cases of amputation had occurred.

TABLE I.—*Primary Amputations*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Injury.
St. Leonard's, Sudbury	2	M. 30	Good	Compound fracture of thigh
„	1	M. 26	Good	Railway accident. Compound fracture of leg just below knee
Crewkerne	—	—	—	—
Malvern	1	M. 39	—	Railway accident. Right leg torn off above knee; fracture of left leg; severe scalp wound
Fowey	1	No particulars		—
Jarrow Memorial	3	—	—	—
		—	—	Double amputation, leg and thigh
		—	—	—
Melksham	1	No particulars		—
Grantham	3	M. 65	—	Compound comminuted; fracture of leg
		M. 19	—	Triple fracture, both bones of leg, crushing of soft parts
		—	—	—
Stockton-on-Tees	1	No particulars		—
Oswestry	1	„	„	—
South Lincolnshire	3	M. —	—	Railway accident. Compound comminuted; fracture of leg; amputation of knee
		F. —	—	Thrashing machine accident. Compound comminuted; fracture of leg, implicating knee
		No particulars		—
St. Albans	1	„	„	—
Kendal	1	M. 35	—	—
Bourton-on-the-Water	1	M. 19	Healthy and of temperate habits	Leg caught and retained in a water-wheel for 20 minutes. Unchecked hæmorrhage for 2 or 3 hours
Ulverston	1	No particulars		—
Mildenhall	1	M. 70	—	Compound fracture of leg, much hæmorrhage
Ashford	1	M. 22	Healthy	Crush, compound fracture
Cranleigh	1	M. 23	—	Crush of leg by steam thrashing machine

Remarks—Twenty-four cases. Fourteen deaths = 58·3 per cent. Shock, 9; septic resulted from shock, the most common cause of death in these cases. In all, the accidents deaths resulted from septic diseases. One patient died on the fifth day, of exhaustion, never

of Thigh for Injury.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
Thigh	—	D.	Shock
,,	—	R.	—
,,	—	D.	Pyæmia
,,	Died immediately after operation	D.	Shock
,,	—	R.	—
,,	—	R.	—
,,	—	D.	Shock
,,	—	D.	,,
,,	—	D.	,,
,,	Collapse; much hæmorrhage; lived some days	D.	,,
,,	—	D.	Septicæmia
,,	—	R.	—
,,	—	R.	—
,,	—	R.	—
,,	—	D.	Shock
,,	—	D.	,,
,,	—	R.	—
,,	—	D.	No particulars
,,	—	R.	—
Knee crushed to a pulp	Patient was collapsed, and stimulants were administered for 30 hours previous to amputation	D.	On 5th day, from shock and exhaustion
,,	—	R.	—
,,	Patient died soon after operation	D.	Shock
,,	—	D.	—
,,	—	R.	—

disease, 2; shock and exhaustion, 1; no particulars, 2. Of these fourteen deaths, nine requiring the operation were very severe, and in two there was excessive hæmorrhage. Two having recovered the shock of the accident, and in two cases the cause of death is unreturned.

TABLE II.—*Primary Amputations*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Injury.
Charlwood	1	—	—	Railway accident. Compound fracture of both legs
Crewkerne	1	—	—	—
Malvern	2	M. 1½	Good	Compound fracture of leg
		M. 46	—	Thrashing machine. Crush of leg
Bromley	1	M. 50	—	Fall of truck on leg
Dorking	3	No	particulars	—
Fowey	1	„	„	—
Burford, Oxon	1	M. 12	Good	Traction engine. Crushed foot
„ Tenbury	1	F. —	—	Machine. Crush of leg
Jarrow Memorial	7	M. —	—	—
		M. 34	Good	Five others without particulars
Ottery St. Mary	2	M. 80	—	Railway. Crush of leg
		No	particulars	—
Stockton	23	All rail	way and iron	work accidents
		The	two amputati	ons fatal from shock were double
Oswestry	4	—	—	Compound fracture
Beccles	1	—	—	Double amputation
Erith	1	—	—	Amputation of foot
Bournemouth	1	M. 30	Navvy	Railway truck passed over both legs; comminuted fracture of front row of tarsus on left side; compound comminuted fracture of left leg; stripping of skin
St. Albans	2	—	—	—
Reigate	1	M. 50	Prematurely aged	Railway smash of leg
Ledbury	1	M. 12	—	Crushed foot and ankle
Ulverstone	1	—	—	Railway crush of foot and leg
Mildenhall	1	M. 20	—	Thrashing machine accident. Lacerated wound of leg and foot
Kendal	1	M. 26	—	Railway injury to leg
Ashford	5	M. 18	—	Crush. Compound fracture
		M. 26	—	„ „
		M. 66	Healthy	Run over. Crushed leg
		M. 40	„	Compound fracture. Tibia and fibula
		M. 33	„	Crushed leg. Machinery

* *Remarks.*—Sixty-two cases. Thirteen deaths = 20·9 per cent. Shock, 4; exhaustion, cases of death from shock, the accidents were very severe. In one, there was a compound which acute bronchitis is given as the cause of death the stump was healed, and the patient occurred in one hospital (Stockton), and the other at Ashford.

of Leg for Injury.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
—	Collapse; died in 6 hours	D.	Shock
—	—	D.	Tetanus
—	—	R.	—
—	—	R.	—
Upper $\frac{1}{3}$	Some sloughing, but stump good	R.	—
—	—	3 R.	—
—	—	R.	—
Lower $\frac{1}{3}$	Perfect	R.	—
—	Shock, anæmia, bronchitis, stump healed	D.	Acute attack of bronchitis
—	Delirium tremens	D.	In 17 days, exhaustion
—	—	6 R.	—
—	—	R.	—
—	—	R.	—
—	—	16 R.	—
—	—	7 D.	2 Pyæmia 2 Shock 3 Unreturned
—	—	4 R.	—
—	—	R.	—
Foot	—	R.	—
Right chopart, left middle, $\frac{1}{3}$ leg	Favourable	R.	—
—	—	2 R.	—
—	Shock, no reaction, death next day	D.	Shock
—	—	R.	—
—	Did well	R.	—
Upper $\frac{1}{3}$	—	R.	—
—	—	R.	—
—	—	D.	Pyæmia
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—

delirium tremens, 1; tetanus, 1; acute bronchitis, 1; pyæmia, 3; cause unreturned, 3. As to the fracture of both legs, and in two others, double amputations were performed. In the case in had been accustomed to have attacks of a similar nature. Of the three cases of pyæmia, two

TABLE III.—*Primary Amputations*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Injury.
St. Leonard's, Sudbury	2	M. 9	Good	Hand and forearm crushed
,,		M. 50	,,	Both arms crushed by machinery; required amputation
Crewkerne	3	No	particulars	—
Malvern	1	M. 14	—	Machinery accident. Compound luxation and comminuted fracture of humerus; fracture of femur; severe scalp wound
Bromley	2	—	—	—
,,		M. 28	—	Thrashing-machine crush
Dorking	1	M. 14	—	,,
Burford, Oxon	1	No	particulars	—
Jarrow Memorial	2	,,	,,	—
Hatfield Broad Oak	1	M. 44	Good	Avulsion of arm by rope of steam plough
Ottery St. Mary	1	M. 20	—	Avulsion of arm by thrashing-machine
Stockton	7	No	particulars	—
,,		—	—	—
Oswestry	4	—	—	Compound fractures
				—
Hillingdon	1	M. 40	—	Machinery crush of forearm; elbow-joint implicated
Beccles	1	No	particulars	—
Newton Abbot	1	M. 25	—	Chaff-cutter accident. Crush of forearm and elbow-joint
Bournemouth	1	F.	Old and cachetic	—
Reigate	2	M. 57	Healthy	Chaff-cutter injuries to forearm and elbow
,,		M. 55	,,	,,
Bourton-on-the-Water	1	M. 16	Healthy, temperate	,,
Ledbury	2	M. 40	—	Crushed arm and elbow
,,		M. 42	—	,,
Buckhurst Hill	1	—	—	Arm severed by railway accident
Kendal	2	M. 14	—	Railway injury to arm
,,		M. 40	—	,,

Remarks—Thirty-seven cases. Five deaths = 13·5 per cent. Shock, 2; doubtful, 1; shoulder joint, and in the other there was a concomitant injury to the chest. In one case the which the cause of death is given as exhaustion, the amputation was at the shoulder joint,

of Arm for Injury.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
—	—	R.	—
Near shoulder	—	R.	—
—	—	3 R.	—
Shoulder joint	Death on 10th day	D.	Exhaustion
—	—	R.	—
Middle	Satisfactory	R.	—
High	Recovery uninterrupted	R.	—
—	—	R.	—
—	—	2 R.	—
Shoulder-joint	—	R.	—
Close to shoulder	—	R.	—
—	—	6 R.	—
—	—	1 D.	No particulars
—	—	3 R.	—
Shoulder-joint	Death occurred 40 minutes after operation, suddenly, while patient was conversing.	1 D.	Entry of air in large veins (?)
—	Well in 20 days	R.	—
—	—	R.	—
Lower $\frac{1}{3}$	—	R.	—
—	Plugged femoral vein after leaving hospital	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	Injury to chest	D.	Shock, &c.
Surgical neck	—	R.	—
Shoulder-joint	—	D.	Shock

exhaustion, 1; no particulars, 1. In the two deaths from shock, one amputation was at the patient died suddenly after the operation, the cause of death being doubtful; in the case in and there was also a fracture of femur and a scalp wound due to the same accident.

TABLE IV.—*Amputations*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Injury.
St. Leonard's, Sudbury	2	M. 53 M. 12	Good „	Hand torn off by machinery Hand crushed „
Crewkerne	2	No particulars		—
Bromley	1	M. —	—	Avulsion of hand by rollers of chaff-cutter
Dorking	1	No particulars		—
Burford, Tenbury	2	M. — No particulars	— —	Steam saw accident —
Jarrow Memorial	1	M. 28	Good	—
Melksham	1	No particulars		—
Hatfield Broad Oak	1	M. 28	Good	Shattering of bones of wrist, &c., by chaff-cutter
Ottery St. Mary	2	M. 7 F. 17	— —	Machine crush of hand „
Grantham	5	No particulars		—
Stockton	5	„	„	—
Oswestry	2	„	„	—
Louth	1	„	„	—
Beccles	1	„	„	—
St. Albans	3	„	„	—
Reigate	1	M. 25	Good	Chaff-cutter smash of hand
Bourton-on-the-Water	1	M. 16	Good health; temperate	Compound fracture
Ulverston	2	M. 22 M. 38	— —	Crushed hand „
Ashford	2	M. 13 M. 18	Good health Good, but much exhausted by hæmorrhage	Machine crush Gunshot injury to bones and arteries
Cranleigh	1	M. 25	Navvy	Compound comminuted fracture, with dislocation of left wrist; compound comminuted fracture of left ankle; laceration of lung
Kendal	1	—	—	—

Remarks.—Thirty-eight cases. One death = 2·6 per cent. The only death in this table in the same accident. At the time of death the amputation was progressing favourably.

of Forearm for Injury.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
—	—	R.	—
—	—	R.	—
—	—	2 R.	—
Just above wrist	Satisfactory	R.	—
—	—	R.	—
Lower $\frac{1}{3}$	Small abscess	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
Lower $\frac{1}{3}$	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	5 R.	—
—	—	5 R.	—
—	—	2 R.	—
—	—	R.	—
—	—	R.	—
—	—	3 R.	—
—	Satisfactory	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	Effusion of blood beneath sternum: died from effect of injuries on 11th day. Amputation progressing favourably	D.	Concomitant wound of lung, &c., &c.
—	—	R.	—

was in a patient who had sustained a compound fracture of ankle and a wound of the lung

TABLE V.—*Secondary*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Injury.
Bromley	1	—	Stout, pale, flabby, a notorious drinker	—
Oswestry	1	M. 40	Delicate constitution	Fracture of leg
Burford, Tenbury	1	M. —	Unhealthy	Simple fracture lower half of tibia, upper one-third fibula
Ulverston	1	M. 23	Phthisical subject	Compound fracture of thigh
LEG.				
Ottery St. Mary	1	M. 50	—	Compound fracture of tibia and fibula from upsetting of waggon, uncontrollable hæmorrhage for many days
ARM.				
Bourton	1	M. 17	Irregular habits	Compound fracture of humerus, caused by bursting of steam engine
FOREARM.				
Newton Abbot	1	M. 30	Good health	Gunshot wound of hand; thumb, forefinger, and metacarpal bones of two middle fingers removed same day
St. Leonard's, Sudbury	1	M. 46	Always good	Part of hand crushed by machinery, one finger amputated
LEG.				
Erith	1	M. 50	—	Compound fracture of tibia and fibula, implicated ankle, and much laceration of soft parts

Remarks.—Nine cases. Three deaths = 33·3 per cent. Of the two deaths in secondary exhaustion, in a stout, pale, feeble man—a notorious drinker, the subject of traumatic was gangrene, following uncontrollable hæmorrhage, lasting many days.

Amputations for Injury.

Nature of Disease.	Seat of Amputation.	Course of Case.	Result.	Cause of Death.
Traumatic gangrene	Thigh	—	D.	Shock
Gangrene of leg	Thigh	Healed rapidly; about in 14 days	R.	—
Phlegmonous erysipelas, sloughing of intermuscular septa as high as knee	Thigh, Lower $\frac{1}{3}$	Slow repeated attacks of second hæmorrhage; discharged in five months	R.	—
Amputated many weeks after	Thigh	Attack of pneumonia	D.	Pneumonia
—	Leg	Gangrene of the stump occurred	D.	Gangrene
Gangrene of whole arm appeared on fourth day	Shoulder	Some sloughing, but patient made a good recovery	R.	—
Acute cellulitis extending two inches above wrist joint; amputated on 14th day	Middle $\frac{1}{3}$	—	R.	—
Abscesses and inflammation	Lower $\frac{1}{3}$ forearm	—	R.	—
Surgical fever inflammation	Upper $\frac{1}{3}$ of leg	Satisfactory	R.	—

amputation of thigh, one was from pneumonia in a phthisical subject, and the other from gangrene. In the one fatal case following secondary amputation of leg, the cause of death

TABLE VI.—*Amputations*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Disease.
St. Leonard's, Sudbury	2	M. 12	For years a succession of strumous abscesses	Necrosis of tibia extending to knee
„	—	M. 74	Good	Ununited fracture of tibia and fibula
Malvern	8	F. 36	„	Strumous disease of knee joint
„	—	F. 24	Fair	„
„	—	M. 5	Debilitated subject	„
„	—	M. 31	Health much broken	Strumous disease of knee, old
„	—	F. 23	Good	Strumous disease of knee
„	—	F. 53	Fair	Gelatinous disease of synovial membrane of knee
„	—	M. 19	Very reduced and emaciated	Strumous disease of knee, old
„	—	M. 14	Good	Strumous disease of knee
Enfield	1	M. 7	Delicate, badly nourished	Abscess, necrosis of internal condyle of femur, disorganisation of knee-joint
Dorking	1	M. 10	Chronic eczema	Necrosis of tibia, implication of knee-joint
Hatfield Broad Oak	1	M. 37	Very emaciated, bad health	Osteo-sarcoma of femur two years; refused earlier operation
Ottery St. Mary	2	Ch. 11	Debilitated	Necrosis of tibia, profuse discharge
„	—	F. 59	—	Anchylosis of knee, and constantly recurring abscesses in calf
Grantham	1	No	particulars	—
Stockton	2	„	„	—
„	—	—	—	—
South Lincolnshire	3	No	particulars	—

of Thigh for Disease.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	Patient died on 5th day	D.	Exhaustion and diarrhœa
—	—	R.	—
Amputation of middle and lower $\frac{1}{3}$ disartic hip	Continuation of necrosis until disarticulation, erysipelas of head	R.	—
—	—	R.	—
—	Secondary hæmorrhage 14 days after operation, ligature of common femoral, recurrence of hæmorrhage in 16 days, ligature of external iliac, died of hæmorrhage in 14 days more	D.	Secondary hæmorrhage
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	D.	—
—	—	3 R.	—

TABLE VI.—*Amputations of*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Disease.
Hillingdon	1	F. 17	Bad, since excision twelve months previous	Sinuses, no bony union, unpromising excision of knee
Erith	1	M. 9	Scrofulous, delicate	Acute periostitis, knee-joint implicated
Reigate	1	M. 23	Strumous	Strumous disease of knee, previous excision
St. Alban's	1	—	—	—
Ledbury	1	F. 38	—	Medullary cancer of knee
Ulverstone	2	F. 4	—	Medullary cancer of lower end of femur
„	—	F. 44	—	Chronic disease of knee-joint
Mildenhall	1	M. 50	Great emaciation	Synovial disease of knee-joint
Chesham	1	M. 21	Good previous to development of cancer	Cancerous tumour of internal condyle of femur
Ashford	2	F. 39	Very cachectic	Fungus hæmatodes
„	—	M. 36	Very unhealthy, strumous	Disease of knee-joint
Cranleigh	4	M. 10	—	Scrofulous disease of knee
„	—	M. 15	Very reduced and feeble	„ and femur
„	—	M. 26	External strumous, anæmia	„ 6 months
„	—	M. 9	—	Carcinoma of femur
Kendal	4	M. 36	—	Disease of knee
„	—	M. 10	—	Ill 15 months, disease of knee
„	—	M. 2	—	Disease of knee
„	—	M. 14	Ill two years	„

Remarks.—Forty cases. Six deaths = 15 per cent. Exhaustion, 3; secondary hæmorr- disease, five of which recovered. "Many of the amputations for knee disease would probably following amputation for malignant disease was from exhaustion following secondary hæmorr- refused an earlier operation.

Thigh for Disease—Contd.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
—	Good	R.	—
—	Amputation of other leg, good	R.	—
—	Secondary hæmorrhage on third day	D.	Exhaustion, secondary hæmorrhage
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	—	R.	—
—	Died in 6 weeks	D.	Exhaustion.
Below trochanter	—	R.	Living many years after.
—	—	R.	—
Lower $\frac{1}{3}$, afterwards higher	—	D.	Exhaustion, suppuration.
—	—	R.	—
—	—	R.	—

hage and exhaustion, 2; no particulars, 1. This table contains six amputations for malignant not have been done in London, where resection is more common." Of the deaths, the one hage, after successive ligature of the common femoral and external iliac arteries; this patient

TABLE VII.—*Amputations*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Disease.
St. Leonard's, Sudbury	1	F. 57	Always in bad health	Extensive caries of tarsus
Market Rasen	1	M. 40	Thin, anæmic	Periostitis, followed by necrosis of tibia. Spontaneous fracture
Malvern	3	M. 65	—	Recurrent necrosis of tarsal and metatarsal bones
	—	M. 22	Good health	Painful pirogoff, stump
	—	—	—	—
Fowey	3	No	particulars	—
Ottery St. Mary	1	M. 78	—	Senile gangrene
Stockton	2	No	particulars	—
Erith	1	M. 9	Scrofulous, delicate	Acute periostitis of tibia. One knee and one ankle implicated.
Reigate	2	M. 12	Strumous	Necrosis of tibia, and suppuration of ankle, following wound of joint
	1	M. 55	—	Compound fracture into ankle. Necrosis of tibia
Cranleigh	1	M. —	—	Periostitis, resulting in disorganisation of right foot
Kendal	3	F. 9	—	Disease of ankle-joint
	—	M. 6	—	,,
	—	F. 60	—	Disease of ankle and ulcer of leg
Erith	1 ft.	M. 76	Declining strength	Senile gangrene of great toe

Remarks.—Nineteen cases. Three deaths = 15·7. In one case no particulars of the the patient recovered from it and lived five weeks, then dying suddenly.

of Leg for Disease.

Seat of Amputation.	Course of Case.	Result.	Cause of Death.
—	Died four years after of cancer of liver	R.	—
—	Up and poaching in one month	R.	—
Since amputation of great toe, foot, and lower ⅓ leg	—	R.	—
Lower ⅓	—	R.	—
—	—	R.	—
—	—	3 R.	—
—	Operation recovered from. No further gangrene	—	Died suddenly five weeks after operation
—	—	{ R. D. }	No particulars
Upper ⅓	Other thigh amputated. Good recovery	R.	—
—	Good	R.	—
—	Sharp attack of idiopathic erysipelas	R.	—
Upper ⅓	Good	R.	—
Lower ⅓ scale	—	R.	—
,,	—	R.	—
Upper ⅓	—	R.	—
Chopart	—	D.	Exhaustion

cause of death are given. In the first case the operation might claim to be successful, since

TABLE VIII.—*Amputations of Arm for Disease.*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Disease.	Seat of Amputation.	Course of Case.	Result.	Cause of Death.
Milton Abbas	1	F. 40	Always delicate. Health much undermined	Aneurismal varix following wound over wrist, gangrene of two fingers. Veins much enlarged up to shoulder	—	Good	R.	—
Jarrow	2	No	particulars	—	—	—	2 R.	—
Ottery St. Mary	1	„	„	—	—	—	R.	—
Grantham	1	„	„	—	—	—	R.	—
Hillingdon	1	M. 10	Hectic, emaciated	Elbow disease. Excision two months previously	—	Good	R.	—
Mildenhall	1	M. 17	—	Synovial disease of elbow	—	—	R.	—
Cranleigh	1	F. 23	Feeble. Seven months pregnant	Scrofulous „	—	Good. Child born alive at full time	R.	—

Remarks.—Eight cases. No deaths.

TABLE IX.—*Amputations of Forearm for Disease.*

Name of Hospital.	Cases.	Sex and Age.	Previous State of Health.	Nature of Disease.	Seat of Amputation.	Course of Case.	Result.	Cause of Death.
Bromley	1	F. 70	—	Necrosis of carpus. Suppuration, numerous fistulæ	Upper ⅓	Satisfactory	R.	—
Bourton	1	F. 17	—	Malignant disease of hand and wrist	—	—	R.	—
Ledbury	1	M. 65	—	Strumous disease of hand and wrist	—	—	R.	—
Cranleigh	1	M. 77	—	Epithelioma of back of hand	—	—	R.	—

Remarks.—Four cases. No deaths.

General Summary of all the Cases.

Results of Amputation. Cottage Hospitals.

	Seat.	Cases.	Recoveries.	Deaths.	Percentage of Deaths.
Amputation for Injury.	Thigh	24	10	14	58·3
	Leg and foot	62	49	13	20·9
	Arm	37	32	5	13·5
	Forearm	38	37	1	2·6
	Totals	161	128	33	20·4
Amputation for Disease.	Thigh	40	34	6	15·0
	Leg and foot	19	16	3	15·7
	Arm	8	8	—	—
	Forearm	4	4	—	—
	Totals	71	62	9	12·6

Results of Amputation. University College Hospital.

	Seat.	Cases.	Recoveries.	Deaths.	Percentage of Deaths.
Amputation for Injury.	Thigh	39	16	23	59·0
	Leg and foot	44	30	14	31·8
	Arm	12	7	5	41·6
	Forearm....	8	8	0	0·
	Totals	103	61	42	40·7
Amputation for Disease.	Thigh.....	86	68	18	20·9
	Leg and foot	74	64	10	13·5
	Arm	24	16	8	33·3
	Forearm....	20	19	1	5·0
	Totals	204	167	37	18·1

Secondary Amputations for Injury in Cottage Hospitals.

Thigh	4	2	2	9 cases,
Leg	2	1	1	mortality
Arm	1	1	—	33·3
Forearm	2	2	—	per cent.
Totals	9	6	3	33·3

Total Numbers in Town and Cottage.

	Cases.	Deaths.	Percentage of Mortality.
Cottage Hospitals	241	45	18·6
University College	307	79	25·7

With regard to the occurrence of septic disease, the statistics given in the above tables are very favourable to cottage hospitals. Mr. Bryant states that in Guy's Hospital 10 per cent. of all amputations die from pyæmia, and that 42 per cent. of the fatal cases may be traced to this cause. Now, on examining these 241 cases, we find 5 cases of septic disease, 4 of pyæmia (2 of these occurring in one hospital), and 1 case of septicæmia, against a total of 45 deaths; so that the percentage of deaths from septic disease to the total number of cases reaches only 2·1, and the percentage of deaths from this cause to the fatal cases is only 11·1. These cases of septic disease all occurred after amputations of the lower extremity. In no case of amputation for disease did pyæmia or septicæmia occur. Of the 2 deaths in the 8 cases of secondary amputation for injury, neither was due to septic poisoning. (In Mr. Erichsen's cases, as many cases of pyæmia occurred after amputation for disease as in primary amputations for injury.) May not this fact be taken as conclusive evidence in favour of the healthiness of small as compared with large hospitals?

The facts contained in the foregoing tables reflect upon the justice of the assertion that there is greater surgical boldness displayed by the London surgeons, as some of the operations point to a surgical skill and boldness which leave nothing to be desired. For instance, a case of amputation of thigh was performed in the Hatfield Hospital for malignant disease of femur, in which both the common femoral and the external iliac arteries were successively ligatured for secondary hæmorrhage; and an amputation of thigh followed by exarticulation of hip was successfully carried out at Enfield.

Again, as to the undertaking of operations, the amputations of thigh for ununited fracture of leg in a patient of 74, successfully performed at St. Leonard's, Sudbury, and that for senile gangrene planned and successfully carried out at Ottery St. Mary, are favourable specimens of surgical boldness combined with judgment. The case of amputation of arm at Milton Abbas, performed after the case had been rejected at the County Hospital, also speaks well for the surgical staff there.

On this subject the following letters from three cottage hospital surgeons will prove of interest:—

Mr. Thomas Moore, F.R.C.S., San. Sc. Certf. Cantab., writes:—

"As regards the comparative influence of the air of large and small hospitals on the healing of wounds, about which you ask my opinion, I do not hesitate to say that I believe they do better as a rule in the smaller institutions.

"I have unfortunately not had the immense experience of operations which falls to the lot of some surgeons in large towns, but I have had considerable opportunities of studying the vexed question on both sides. First, for five years (during eighteen months of which time I was surgeon's dresser) at St. Bartholomew's Hospital, and for one year at the Queen's Hospital at Birmingham; then as surgeon for six years to two of the largest ironworks in Staffordshire; and lastly, for between eight and nine years as surgeon and hon. secretary to the Petersfield Cottage Hospital, and in a large private practice.

"*Cæteris paribus,* I found that the very numerous cases of compound fracture and severe wounds I was called upon to treat in the ironworks and their attached collieries did better, as a rule, when treated isolated in the patients' own cottages than when removed to a hospital, in spite of inferior nursing and poor feeding. That was, however, I am bound to say, when I looked after them daily or more frequently, *myself;* for the old saying, 'cleanliness is next to godliness' is more than true when applied to surgical dressings.

"The way in which wounds heal in the pure air of this cottage hospital (Petersfield), where there are good nursing, and every available creature comfort, and where no ward contains more than two beds, is beautiful; and I think I could persuade even Mr. Lister himself that antiseptic precautions are not necessary under all circumstances, if I could get him to spend twelve months in the unexciting but germless atmosphere of our cottage hospital. Out of 272 surgical cases, many of them of a serious nature, only one has been attacked by erysipelas, and that occurred when there were several cases of puerperal fever in the neighbourhood, and could thus probably be accounted for. It is only right to mention that some of the healthiness of this hospital may be attributed to the fact that we have no sewer gas laid on, as is too frequently the case, I fear, even in the best drained towns. The closets are on the earth principle, and the drain from the kitchen sink is made to open well into the outer air.

"It has been urged against the statistics which have been brought forward to prove the superior suitability of cottage hospitals for the treatment of severe surgical cases, that the more severe ones are rejected in them, and are sent to the larger hospitals. This has certainly not been the case here. Two or three cases of a chronic nature, where the advisability of an operation was doubtful, have been sent away, but every case of accident has been taken in without inquiry, and some were of a most severe and unpromising nature. On the other hand, it is well known to the initiated that some of the great London operators are very careful to select their cases, and this they can easily do without its being known; whereas if a country surgeon declines to operate, all the neighbourhood likes to know the 'why and wherefore,' and is apt to make invidious comparisons.

"It has been urged against the establishment of cottage hospitals that the same amount of surgical skill cannot be brought to bear upon the cases as in larger ones. That may be, and it would savour of egotism on my part to deny it. Still if statistics prove that cases (of amputation for example) get on better in the former than in the latter, is it not better for the patients to have pure air and less skill brought to bear upon their ailments?

"Moreover, this state of things will tend to mend itself year by year, as severe cases are more and more treated by the local surgeon, and are not sent off to the county infirmary, as was formerly the rule. I lose no opportunity of urging on the numerous rich residents of this neighbourhood the fact, that in supporting the cottage hospital, they are but 'casting their bread upon the waters,' for the more practice the local medical men get in bad accidents and operations among the poor people, the better will they be able to treat emergencies among the rich, and the less necessity will there be for the 'eminent consultant' and his 50 guineas' fee, and they are, I believe, beginning to see the truth of the remark.

"A well known gentleman, and an enthusiastic supporter of medical institutions, argued with me a short time ago against the institution of cottage hospitals, and, as a kind of 'clencher,' averred that they are damaging the county infirmaries. I fear that may be so, but in this matter the 'greatest good of the greatest number' must be considered. The latter have had their day, and *have* done much good, but if the former are calculated to do more still, surely no sentimental idea of that kind should be allowed to stand in their way. The larger institutions will still be very useful to receive the chronic and incurable cases, even if they do not attract the accidents and operations so much."

Mr. Thomas H. Cheatle, of Burford, writes:—

"As to the necessity for an operation, the case and the common sense of the surgeon determine the question. Of course in any difficult case further advice and assistance would be obtained. In a purely agricultural district like this, with little machinery, and the people becoming more used to what there is, there is little surgery in the way of operations to be had, and it is quite possible that the country surgeon, while he is careful to avoid temerity, may seem to lack the 'boldness' which is assumed to be the characteristic of the urban operator."

Mr. W. Berkeley Murray, of Tenbury writes:—

"My general rule has always been to ask the advice of my colleagues, and upon a conviction that an attempt to save the limb would be attended by danger to life of the patient, I have operated without unnecessary delay. I think there can be no doubt that there is greater surgical boldness shown by surgeons of large hospitals, and reasons for this are not far to seek. The authority of the man with a name, and the authority of the large and old established institution cover all ill success, and it is responsibility which produces caution, not to mention the boldness given by constant practice. Nevertheless, we undoubtedly possess *great* advantages in the pure country air and quiet, and in the concentrated care we are able to bestow on any bad case."

The above remarks are forcible and convincing, and they will certainly carry weight.

Two points may be referred to in this connection. It must not be overlooked in considering the question of surgical boldness, that a surgeon to a large clinical hospital is under the necessity of remembering that he has as far as possible to cure the greatest number of patients in the shortest possible time. Hence a surgeon so situated is under the necessity of operating frequently because of the crowded state of the hospital and the great demands upon its available space. Such circumstances render speedy results an absolute necessity.

Again, the long distance which patients have to be carried to reach the cottage hospital, as compared with that traversed by accident cases in large towns, may reasonably be considered to increase the deaths from shock, and to add to the severity of the conditions which render recovery improbable. In large towns not only is the distance shorter, but the patients are more accustomed to think at once of the hospital, and there conveyances are always to be had. These are, therefore, not unimportant considerations.

It has taken some years to compile and complete the statistics contained in this paper. Early in 1876 I commenced to collect the first portions of these statistics, which were given in my book on cottage hospitals,* published in 1877. In consequence of the criticism which these tables elicited, I resolved to still further investigate the subject, and after nearly two years' labour I obtained the history of each of the two hundred and forty-one cases with which I have been dealing in the latter part of this paper. It will therefore be observed that the compilation of my statistics has occupied nearly four years, and that I was not able to complete my second set of tables, which include a history of each case enumerated, until the end of the year 1880. I then offered to read a paper before this Society. The proposal was cordially entertained by the Council; but owing to various circumstances, it has not been possible to present it for the consideration of the Fellows until this evening. Thus nearly six years have elapsed since I first commenced my investigations on this instructive subject.

Science never stands still: all true science is progressive. There is no finality of which we can be certain where science is concerned. It follows almost as a matter of course that this period of six years has revolutionised the treatment of cases of operation and open wounds, both in hospital and private practice. Aseptic surgery since the year 1878 has been making rapid and convincing progress. Its results have practically cut the ground from under the feet of those who with anxious care formerly debated the question of the relative mortality of large and small hospitals. I

* "The Cottage Hospital; its Origin, Progress, Management, and Work," first edition, 300 pp. London: J. and A. Churchill.

am therefore, as an honest searcher after scientific truth, induced to-night to declare that the aseptic system of Mr. Lister has practically solved this great question, by proving that where this method of treatment is carefully enforced, the size and condition of the hospital buildings is of comparative unimportance. It would be wrong of me to content myself with a bare statement of this important fact, and I therefore proceed to give the evidence upon which my declaration is founded. To enable me to do this I must trouble you once again with statistical tables. These tables contain an account of the results obtained in Germany from two hundred and thirty-four cases of amputation from various causes, all of which were treated aseptically on Professor Lister's plan. It has been necessary to somewhat alter my statistics, so that they may exactly correspond with those prepared by the eminent German surgeon Dr. Schede, of Hamburgh.* This has slightly reduced the number of cases given in my tables, because Dr. Schede omits double amputations, cases in which other severe injuries co-exist, and cases in which intercurrent diseases not related to the operation carry off patients whose stumps are healed. This has slightly improved the percentage in cottage hospital practice. In spite of this, however, the mortality in cottage hospital practice stands at 15·3 per cent., as against 2·9 per cent. in the cases recorded by Dr. Schede, which were treated in large German hospitals, on the Listerian or aseptic system. It thus follows that whereas Sir James Simpson gives an average mortality in town hospitals of 41·6 per cent., and although Mr. Erichsen was proud to be able to prove some fifteen years ago that the average mortality from all the amputations performed in the wards of University College Hospital from its foundation, a period of thirty-eight years, was only 25·7 per cent., the late Mr. Callender, in his papers in the St. Bartholomew's Hospital Reports, 1869, p. 263, showed that the mortality after amputation in certain country hospitals was 17·5 per cent.; and I have shown that the results attained in cottage hospital practice give a mortality of but 15·3 per cent. Dr. Schede proves beyond dispute that Mr. Lister, by his wonderful discovery, has enabled the surgeons who adopt it conscientiously, irrespective of the size of the hospital buildings, to reduce the mortality in such cases to 4·36 per cent.† The following tables, which have been prepared by my friend Mr. G. H. Makins, who has rendered me much valuable assistance in the compilation of this paper, give Dr. Schede's and my own figures in detail :—

* *Vide* Dr. Schede's article in Pitha and Billroth's "Handbook of Surgery."

† The actual mortality on all Dr. Schede's collected amputations. In the tables given above, the amputations at the hip and shoulder joints are excluded, as no such cases occurred in the cottage hospital practice.

Amputations for Injury.

Seat.	Schede's Antiseptic Statistics.				Burdett's Cottage Hospital Statistics.			
	Cases.	Recoveries.	Deaths.	Percentage of Deaths.	Cases.	Recoveries.	Deaths.	Percentage of Deaths.
Thigh	23	18	5	21·7	22	10	12	54·5
Leg	19	19	—	—	57	48	9	15·7
Arm	20	20	—	—	35	31	4	11·4
Forearm	34	34	—	—	37	37	—	—
Total	96	91	5	5·2	151	126	25	16·5
Complicated Cases—								
Double amputations	13	10	3	23·0	5	1	4	80·0
Severe multiple injuries	11	3	8	72·7	4	—	4	100·0
Deaths from intercurrent disease	27	11	16	59·6	1	—	1	100·0
Total	51	24	27	52·9	10	1	9	90·0

Amputations for Disease.

Seat.	Schede's Antiseptic Statistics.				Burdett's Cottage Hospital Statistics.			
	Cases.	Recoveries.	Deaths.	Percentage of Deaths.	Cases.	Recoveries.	Deaths.	Percentage of Deaths.
Thigh	63	62	1	1·5	40	34	6	15·0
Leg	50	49	1	1·0	19	16	3	15·7
Arm	12	12	—	—	8	8	—	—
Forearm	13	13	—	—	4	4	—	—
Total	138	136	2	1·4	71	62	9	12·6
Complicated Cases—								
Double amputation	—	—	—	—	—	—	—	—
Severe multiple injuries	—	—	—	—	—	—	—	—
Deaths from intercurrent disease	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—

All Uncomplicated Amputations for Disease or Injury.

Seat.	Schede's Antiseptic Statistics.				Burdett's Cottage Hospital Statistics.			
	Number of Cases.	Recoveries.	Deaths.	Percentage of Deaths.	Number of Cases.	Recoveries.	Deaths.	Percentage of Deaths.
Thigh	86	80	6	7·0	62	44	18	29·0
Leg	69	68	1	1·4	76	64	12	15·7
Arm	32	32	—	—	43	39	4	9·3
Forearm	47	47	—	—	41	41	—	—
Total	234	227	7	2·9	222	188	34	15·3

Callender, in his papers in the Bartholomew Hospital Reports, 1869, p. 263, shows that the mortality after amputation in country hospitals was 17·5 per cent. (and that in old days).

Country patients in St. Bartholomew's Hospital ..... 17·0 per cent.
„ private patients in London ..... 17·1 „
„ „ country ..... 10·8 „

The figures and tables here given show fairly and truthfully what has been the saving of life owing to the adoption of the aseptic or Listerian treatment of wounds; that is to say, a mortality of 41·6 per cent. in 1868, and a mortality in 1872, according to Professor Erichsen, of 37·8 per cent. in the larger metropolitan hospitals, and of 25·7 per cent. in University College Hospital, has fallen in Germany, under the Listerian method, to 4·36 per cent. in 1880. These figures are so remarkable as to be almost incredible. The results obtained in different classes of operations have been equally noteworthy. Thus Mr. Spencer Wells, the eminent ovariotomist, by whose direct agency Lord Selborne,* in a public address, once demonstrated 22,272 years of human life may be estimated as having been added to society, gave† the result of the last 168 cases which he had treated in private practice as follows:—The first 84 had been treated by the old methods, "but "yet with all the care I could give to them, there were 21 deaths." The last 84 were treated aseptically, and of these only 6 died. Nor is this all, for he adds: "As I went on and became still more "accustomed to the method and details of antiseptic treatment, "and avoided mistakes, then I obtained the long run of 38 cases "without a single death." Could anything more gratifying, or more honourable to a great profession, be imagined than the fact that the operation of ovariotomy has been performed in 38 consecutive cases without a single death, when it is remembered that this operation (ovariotomy), so recently as the year 1857,‡ was in "absolute disrepute." I have shown how many hundreds of lives have been saved, and are being saved, every year by the aseptic, or Mr. Lister's system. I have produced evidence that this new departure has rendered it a matter of secondary importance whether serious cases of injury and operations are treated in large or in small hospitals. I have proved that at least twenty-two thousand years of health, of usefulness, and happiness, have been added to the life of woman in Great Britain by the direct agency of another eminent surgeon, Mr. Spencer Wells. Yet to the honour of these gentlemen, but to the dishonour of our nation, neither have received any public recognition at the hands of those who distribute the national honours and rewards in this country. How has it happened that two such men as Lister and Wells, whose names are no small glory to England as benefactors to humanity at large, have not ere this received the highest honour which Government ever bestows upon medical men? Is it because fashion or custom, or both, have decreed that Courts and Governments should confer the highest honours

* "British Medical Journal," 1880, vol. i, p. 932.
† Debate on Antiseptic Surgery, December, 1879.
‡ "British Medical Journal," 1880, vol. i, p. 931.

on those who are most successful in destroying life on a large scale, and not on those who save life? At any rate, be the cause what it may, the fact remains; and a damaging fact it is. No wonder if the flower of our university youth choose the Church, or the law, the army or navy, or some branch of the civil service of the State, rather than the medical profession, because they at once take an enviable social position, and a successful career may lead to titles and pensions, and to a seat in the House of Lords. It has been well asked, why should a baronetcy be the highest titular distinction conferred upon members of the medical profession? Is Jenner or Paget less worthy of a life peerage than the eminent men who now sit on the bench of bishops, or any of the lawyers, soldiers, or sailors who have been rewarded by hereditary peerages? Can any member of the House of Lords do greater service to his country in that assembly than an eminent member of the medical profession could render in the promotion of legislation for securing and protecting the public health? I for one think not. Yet in spite of the enormous saving of life effected under providence by the direct labours of Lister and Wells, neither have yet received a shade of a shadow of recognition from the Government of this country. Such an anomaly should not long continue. It is time public attention was called to it, for then those who save life will share the honours, the rewards, and the pensions with those who destroy life. Then, and not till then, justice will be tardily done to the members of a great profession, whose services are rendered to each and all of us at the time of our sorest need and greatest suffering. The sooner this awakening of the public conscience takes place, the better will it be for the national credit. Such at any rate is my view of the case, and as one aspect of the great question I have been considering in this paper, I hope this expression of opinion may not be inopportune or without practical results.

APPENDIX A.

Result of Amputation of the Limbs in Cottage Hospital Practice.

Return from ..... Cottage Hospital, having ..... Beds.

Seat of Amputations.	Primary, or for Injury.		Secondary, or for Disease.	
	Number of Cases.	Number of Deaths.	Number of Cases.	Number of Deaths.
Amputation of thigh				
„ leg				
„ arm				
„ forearm				
Total				

Signature .....

Residence .....

Date .....

Remarks.

Note.—The cause of each death should be noted if possible, viz., whether secondary hæmorrhage, shock, pyæmia, or other cause. A short history of each case should also be given.

Discussion *on* Mr. Burdett's Paper.

Mr. Robert Lawson said that anyone who was accustomed to such work, would understand that Mr. Burdett's paper could not have been compiled without a great deal of assiduous attention and hard work, and they were therefore much indebted to him for the trouble he had taken. The subject of cottage hospitals had been gradually taking an increased hold upon the country. Long ago Sir James Simpson pointed out the advantages to be derived from such places, but his results were objected to by several of the surgeons of large hospitals. With perhaps an allowable feeling of self-esteem, those surgeons thought that the results in their hospitals could not be exceeded, and that if apparently better results had been obtained elsewhere, it must have been owing to the fact that less serious cases had been dealt with. Some people fancied that the statistics of disease should be taken, instead of injuries, to test this question; but any one acquainted with the phases of disease knew that such a task was attended with very great difficulty. There were such varieties of nomenclature, that it was difficult to say when a case of inflammation of the lungs, for instance, began and when it ceased; but when dealing with a limb torn by machinery, or a bone fractured, they had something tangible before them, and could draw their own conclusions. If the results in such cases in cottage hospitals were more favourable than in large hospitals, it was natural to conclude that the same advantages would be obtained in the treatment of ordinary diseases. The author showed there were great differences in the mortality following operations on different parts of the limbs. Amputation of the thigh was attended with much more danger to life than amputation of the leg; amputation of the leg than amputation of the arm; and amputation of the arm than amputation of the forearm. In calculating the risk attending any single series of operations on one of those parts, it might be done as in the table given, where there were twenty-four cases of amputation of the thigh in cottage hospitals—ten recoveries and fourteen deaths; but it would not do to take a group, as the author had done, embracing injuries of the thigh, leg, arm, and forearm, and compare them with another group in University College Hospital, where those injuries occurred in different proportions. For instance, the injuries for which amputation was necessary of the thigh and leg and foot in the cottage hospitals were 53 per cent. of the total, while those of the arm and forearm were 47 per cent. In the paper that group was compared with Mr. Erichsen's results at the University College Hospital, where the amputations of the thigh and leg amounted to 81 per cent., and of the arm and forearm to only 19 per cent. It was clear that those two groups could not statistically be compared with one another. He (Mr. Lawson) had taken the 161 cases mentioned of primary injury and divided them according to the same percentage

as Mr. Erichsen's figures, and he had calculated the mortality, using Mr. Burdett's own ratio of mortality in the cottage hospitals. The result was as follows: of the 161 injuries, 52·9 would have died; that would be a mortality of 32·8 instead of 20·4. There was then still a marked difference of 7·9 per cent. in favour of the cottage hospitals over the University College Hospital. Then the question arose, was that difference accounted for by the cottage hospitals receiving a less serious class of cases, or by something in the hospitals themselves? Every practical man would allow that large hospitals had the worst class of cases as regards constitution to deal with; but that was not sufficient to account for it. The antiseptic treatment had reduced the mortality from 40·7 to an extremely small figure, but the antiseptic dressing would only affect some elements of the case. It would not affect "shock," though it would have a considerable influence upon those causes which led to pyæmia or septicæmia, one of which was the absorption of pus and the other the absorption of putrid matter, which poisoned the system. In the cases mentioned in the paper the aseptic treatment had reduced the mortality very greatly, but if the constitutions of the patients had been the cause of the great difference, it could not have reduced them to so great an extent. He assumed, therefore, that there was a difference in favour of the cottage hospitals. What was the cause of that difference? The statement by Mr. Callender, that in former days the mortality after amputation in country hospitals was 17·5 per cent., was very striking. It was very extraordinary that in the old days the mortality should have been less than it had been recently. He had obtained some statistics which brought the fact out very strongly. In the Peninsular War, after the battle of Vittoria, large hospitals were formed, to which the wounded were sent. Hospital gangrene broke out, and caused an immense mortality. Afterwards the practice was adopted of treating the wounded chiefly with the regiments in the field. A certain number were sent away, but others remained with the regiments, and the amputations took place in the field, and the wounded remained there until they were cured. As was the custom in treatment then, the men in the field had spare allowance of food, and few comforts, but the results were these, that of 15 cases of amputation at the shoulder joint 1 died, or 6·7 per cent.; of 98 cases of amputation of the upper extremity 5 died, or 5·1 per cent.; of 84 of the lower extremity 19 died, or 22·6 per cent. These were cases of soldiers absolutely treated in the field, and were to some extent under similar conditions to men in cottage hospitals. After the battle of Toulouse the wounded were placed in hospitals in that town. Among them there were 41 cases of primary amputation of thigh and leg, and 7 of arm, and only 10 died altogether. He would assume that the whole of the 10 were cases of thigh and leg amputation. After the battles of Quatre-Bras and Waterloo there were a number of cases of primary amputation brought from the field to the hospitals in Brussels, others were performed in the hospitals themselves, and of these there were altogether 43 primary amputations of the arm and forearm, of which 5 died, or 11·6 per cent.; 97 cases of thigh and leg amputation, of which 26 died, or

26·8 per cent. Continuing then these groups, it is found that of 148 cases of amputation of the arm and forearm, 13 died, or 6·8 per cent., of 222 cases of amputation of the thigh and leg 55 died, or 24·8 per cent. Altogether there were 370 cases, of which 65 died, or 17·6 per cent., which was just about the rate of mortality that Mr. Callender mentioned as having prevailed formerly, though he did not specify the proportion in which the different cases occurred. In the Crimea, from the 1st April, 1855, when the soldiers were well housed, and had plenty of food, with a liberal supply of stimulants, there were 148 cases of primary amputation of the arm and forearm; of these 23 died, or 15·5 per cent., which was rather more than double what took place in the Peninsular war under much worse circumstances. There were 235 cares of primary amputation of the thigh and leg, 118 died, or 50·2 per cent. Thus twice as many died in 1855 as in the latter part of 1813-15. This result took place notwithstanding the use of chloroform, and what were regarded as general improvements in the treatment. The question therefore arose whether all the so-called improvements were really advantageous. The reply must be that some of them were positively injurious.

Mr. H. Moncreiff Paul failed to see the connection which the remarks regarding the medical profession made at the conclusion of Mr. Burdett's paper had with its main subject. Mr. Burdett had no doubt good reasons for taking up the cudgels on behalf of that profession, but he (Mr. Paul) was at a loss to follow the logic of the writer in the reasons which he had adduced in support of the proposition, that because the highest honours had been conferred on those who destroyed, and not on those who saved life, it was to the honour of Mr. Lister and Mr. Spencer Wells, but to the dishonour of the nation, that neither of those gentlemen had received any public recognition from those who distribute the national honours and awards. He must also join issue with Mr. Burdett in the assumption that the medical profession was shunned because its members had not before them the incentive of ultimately securing a seat in the House of Lords. In the choice of a profession men naturally looked to their own fitness and to the monetary advantages which it was likely to carry with it, and the barrier to many in adopting the medical profession was not the absence of honours, but of the *mens sana in corpore sano.*

Professor Leone Levi pointed out that the paper gave no dates, and as medical systems changed from time to time, it was necessary to have the date in which any particular case occurred. The preference given to the cottage hospitals as against the larger hospitals would seem to be opposed to all economic principles of working on a large scale as compared with working on a small scale. The larger hospitals had greater resources at command, much greater facilities for the expenditure of capital, in the general treatment of cases, and also a greater choice of eminent surgeons. In addition to this the smaller hospitals had this disadvantage: that they had less public supervision, and one could imagine that where there

was not supervision there would be a greater inducement to negligence.

Mr. T. Moore, F.R.C.S., said that there could be no doubt that some time ago, before Mr. Lister introduced his antiseptic treatment, the mortality of some hospitals was very great indeed. The mortality in the Glasgow hospital, in which Mr. Lister himself practised, was so great that the building had to be pulled down, and a new one erected. The reason was no doubt that the air in a large hospital ward was more or less full of germs of disease emanating from the patients. In small hospitals or private practice it was impossible to have these germs to any great extent. When he wrote the letter quoted in the paper, he felt sure that a small hospital was superior in that respect to a large one, but since then he had come to a slightly different conclusion, namely that it was not so much the size of the hospital that made the difference in the mortality as the size of the ward. In the Petersfield hospital the largest ward contained only two beds, and such a thing as erysipelas or pyæmia was unknown there, except in one instance, in which it could be traced to a surgeon who had been attending other patients in other places. Small wards were also advisable because of the effect produced upon the patients' minds by other patients dying in beds close to them.

The Rev. Isaac Doxsey said that to him it was an insoluble mystery why with better scientific training, with greater mechanical advantages and appliances, with every attention to structural and sanitary arrangements, there should be a greater mortality among patients in large hospitals now than in former times. He had endeavoured to account for it by this idea, that perhaps the capacity of the human system for enduring disease was not so great as it formerly was. He was inclined to think that there was in operation some cause deteriorating the tenacity of life. He drew attention to facts stated in Dr. Steel's "Howard" essay, with regard to St. Thomas's Hospital. It was there stated that when the patients from the old hospital were transferred to Surrey Gardens the mortality increased, and in the present hospital on the Embankment the mortality was still greater, notwithstanding that the hospital was supposed to have been built with every modern appliance. It was remarkable that the increased death-rate was more in the male than in the female sex, and more in medical than in surgical cases.

Mr. F. Wright thought it was of vital importance that the hospitals should be kept clean, and he therefore asked Mr. Burdett if he could state whether at the cottage hospitals more attention was paid to cleanliness, ventilation, repainting and rewashing of the walls, &c., than in large hospitals.

Mr. A. E. Clarke asked whether the antiseptic treatment had been introduced into London hospitals to the same extent as in the German hospitals.

Mr. Burdett, in reply, said that statisticians, like other people, could deal only with the figures placed in their hands. It was easy enough to manufacture statistics, but that was an occupation which no scientific man could follow. It was quite true that in the tables given, the number of cases did not in each instance exactly tally, but Mr. Lawson had shown that after rearranging the various classes of operations in exact proportions, there was still a difference of 7·9 per cent. in favour of cottage hospitals. In the tables which gave a summary of all the cases, the difference was 7·1 per cent. in favour of cottage hospitals, so that if Professor Erichsen's cases and his own tallied numerically, in every group of cases the difference would only be 0·8 per cent. Hence the two methods of classification were practically the same as far as results were concerned. The fact that in old days the mortality in large hospitals was less than at present, might be explained in a measure by the knowledge that in former times the arrangements with reference to drainage and so forth were not of a highly scientific character. The drains for instance were not connected directly with the wards, and the excreta and other matters were carried outside the building at once. In the case of field hospitals it was invariably necessary that this should be done, and there was no direct connection with any closed retort, *i.e.*, a cesspool or level sewer, which would generate foul gases. Further, it had been shown over and over again, that for surgical purposes tent hospitals were the most desirable, because there was a rapid renewal of air. Nor were tents necessarily cold, for in Russia, by a system of heating from below, it had been found possible to maintain any required temperature. When an epidemic of blood poisoning prevailed in the Royal Infirmary at Manchester, an examination of the condition of the drainage exposed such a state of horrors that it was found necessary to stop operations altogether for a time, and it was decided to erect ordinary field hospital pavilions in the grounds adjoining. The results obtained there had been satisfactory as compared with those attained in the wards of the infirmary itself. One speaker had thrown doubt upon the logic of the concluding remarks in the paper. The subject for consideration was the relation of the acts of the medical profession to hospital mortality, and when in the course of the paper it was incidentally shown what the labours of two members of the profession had accomplished, he did not consider it out of place to draw attention to the well known fact that medical men occupied an exceptional place in the absence of state honours. Professor Levi had asked for dates. The first cottage hospital was established at Cranleigh, Surrey, in 1859, and the operations recorded in the paper were all of which a record had been kept in the cottage hospital case books during the twenty years ending 1878. He would take care that the dates were especially noted before the paper appeared in the *Journal*. The relative cost per bed in cottage hospitals was considerably less than the cost in large hospitals in towns. Owing to the personal interest that was taken in these institutions by the village residents, he believed that there was far greater public supervision in cottage hospitals than in large hospitals. As an instance of the good results arising from careful supervision, he

would mention the Birmingham General Hospital, which was managed by laymen who exercised continual watchfulness. The consequence was that the economy there was a wonder to some of those who had been connected with other large hospitals. Mr. Moore's contention, that the smallness of the wards was of greater importance than almost anything else, seemed at first sight to have something in it, but unfortunately experience proved the contrary to be the case. One of the hospitals in London with nearly 300 beds, had 80 small wards. There were 148 surgical beds, but in 1877 operations had to be discontinued there altogether for a time in consequence of the high mortality. At the Rotunda Hospital, Dublin, there were comparatively small wards. Only one at a time was occupied by lying-in women, the one last occupied being kept vacant for a time before new cases were brought into it. At first the mortality decreased, but it was doubtful whether the system was as efficient as it was expected to be. At the Exeter Hospital the mortality after amputations was small. This result was attributed by the medical staff to the fact that operation cases were always isolated in a ward shut off from the other parts of the hospital. The patients were retained there for at least a week before they were allowed to go into the larger wards. With reference to the depressing effect on other patients of one patient dying in a large ward, he knew of an instance in which it was decided to have a dying ward to which patients were to be removed when all hope was lost of their recovery, but when the first case occurred the doctor refused to take the responsibility of ordering the patient's removal. With regard to Mr. Doxsey's observations about St. Thomas's Hospital, he had no doubt that the large mortality there and at the Leeds Infirmary arose from the faulty construction of the buildings which were so arranged that there were large *cul-de-sacs* in which foul air accumulated, and through which a current of fresh air seldom or never passed. He was not prepared to say the wards of cottage hospitals were more frequently renovated than those of large hospitals, but the personal interest that was taken in them caused a constant polishing up to be going on, and the walls instead of being painted were usually papered and varnished. At the Home Hospital for paying patients, Fitzroy House, (16) Fitzroy Square, the walls were papered and varnished. After operation cases the wards were immediately cleansed and left vacant for forty-eight hours if possible, always for at least twenty-four hours, and there had never been the slightest sign of any blood poisoning. Leaving the wards unoccupied and ensuring the free circulation of air were important factors in getting rid of infection. Mr. Clarke said that on the whole the figures given in the paper were disparaging to large hospitals, but they were a fair and true statement of the facts. No disparagement was intended, quite the contrary, but the figures must carry their own interpretation with them.

MISCELLANEA.

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I.—*Professor* William Stanley Jevons, F.R.S.

We have to record with deep regret the death of Professor Jevons on the 13th August, at Bexhill, Sussex. Professor Jevons was long and intimately connected with the Statistical Society, and for several years was one of its secretaries; his resignation of that post, as well as of his place on the Council, owing to his weak health and the increasing demands on his time, took place only two years ago. The following is a list of the papers which he read at our meetings:—

16th May, 1865. "On the Variation of Prices, and the Value of the Currency since 1782."

17th April, 1866. "On the Frequent Autumnal Pressure in the Money Market, and the Action of the Bank of England."

17th November, 1868. "On the Condition of the Metallic Currency of the United Kingdom, with Reference to the Question of International Coinage."

19th November, 1878. "Remarks on the Statistical Use of the Arithmometer."

In recent years, while prosecuting the study of statistics in various ways, he has made numerous donations to the library, has contributed frequently to the miscellany in the *Journal*, and generally has identified himself with the Society. The members of the Society have thus special cause to lament his loss, and the members of Council and office bearers also feel the loss of a friend who was greatly endeared to them, and whose place at the meetings will long be missed. No one could have the slightest acquaintance with him without feeling his greatness as a man of science and philosopher, who was as far as possible from being a statistician and nothing else. By his other qualities his statistical powers were enhanced, and he did more to make statistics generally known and appreciated, than hundreds and thousands skilled in statistics only,

without his wide grasp and knowledge of science and scientific methods. We trust some more fitting tribute may yet be paid to his memory by those who knew him well; but however imperfectly, we feel it our duty to record at once our sense of the special loss which the Society has sustained. To complete our notice we extract the following remarks which have appeared in the *Statist* and the *Economist*.

From the *Statist* of 19th August, 1882:—

"It is only a few months ago that we had to lament the death of Mr. Newmarch, and now we have to record another great loss to economic science and statistics, in the accidental death of Professor Jevons at the comparatively early age of 47. The loss of two such men in one year, both at an age at which they were capable of a great deal of work, and had every prospect of living to accomplish a great deal, is a heavy blow to all who are interested in these studies.

"It is hardly possible to estimate too highly the service which Professor Jevons has rendered, not only to the above studies, but even more generally as a philosopher. Among his chief works are to be reckoned not merely the economical and statistical essays by which perhaps his name is best known, but such a work as his *Principles of Science*, which is in no way economical and statistical, but which discusses fully the logic of all the sciences, and only refers to economics and statistics in their proper place. As a general scientific writer, Professor Jevons, in virtue of this book alone, holds a high place, and there are few books, we should imagine, likely to be more useful to the student than this for the impression it gives of the nature of scientific methods and the general scope of scientific knowledge. As an epitome of the best modern thought on the subject, illustrated and completed by not a few original ideas, the book is in a sense unique, and far more valuable than the usual treatises of abstract logic. Professor Jevons wrote sufficiently to show himself qualified for the exposition and discussion of the principles of logic in their most abstract form; but this work on *Principles of Science* is not a book of abstractions, but is full of illustrations from the concrete, and pervaded with a wide and extensive knowledge of the various physical as well as moral sciences. And it was because of his wide capabilities and gifts, we think, that Professor Jevons was so successful in specially economic and statistical work. Economics and statistics occupied a clearly defined place in his mind, and by no means the largest place, and in dealing with them he was able to apply a large store of learning and philosophic theory which was of the utmost value. He was able to look at them in their proper connection and as part of the general scientific whole. It is to be regretted, we think, that the direction of his studies did not induce him to write more than he did on the general theory of statistics, and that, instead, he devoted himself to work out the mathematical theory of political economy; but his work in the latter respect will undoubtedly be most useful, and will prepare the way for subse-

quent inquiries in the fields of economy and statistics. His special statistical essays, though he wrote little bearing on the general theory and principles of statistics, are informed with the true statistical spirit, and are models of the kind of research and reasoning which ought to be applied in such investigations. Amongst these, his most famous are the inquiry into the Rise of Prices caused by the Gold Discoveries in Australia and California, and his inquiry into the extent of the English Coalfields, and the probable exhaustion of coal at an earlier date than had previously been thought possible. The former of these essays will, in our view, be found to be amongst the most important of the time. It contains—almost for the first time—the extended use of an 'index number,' as it is called, which is found so invaluable in dealing with questions of the rise or fall of prices generally, and it proves to demonstration that between 1848 and 1862, the latter being the date at which the essay was published, there had been undoubtedly a certain rise of prices which could only be due to the gold discoveries. The conclusions of the essay on the Coal Supply have been a good deal misrepresented; but the main conclusion, that the prosperity of England as it existed twenty years ago cannot continue in the same way without the exhaustion of the supply of coal at no very distant date, amounted, we think, also to a demonstration. It is sometimes assumed that Professor Jevons will be proved to be wrong, unless the supply of coal is actually exhausted and unless the consumption is actually maintained at the rates which he anticipated; but his whole argument was that the supply would not, in fact, be exhausted, because the production would become increasingly difficult, and that the rate of consumption would not be continued for these reasons; the result being that the conditions of prosperity in England as they existed twenty years ago would become greatly changed, and that provision for this change ought to be made by wise and thoughtful politicians. Much of the interest in the question may be superseded before the coal supply is exhausted by electric and other inventions, and by changes in the industrial habits of the English people themselves; but all the same, the essay was invaluable as calling the attention of mankind to one of the special conditions of the existing form of English prosperity, and to the inevitable approach of some change which would have to be met. The immediate practical use of the conclusion is not obvious; but perhaps in a generation or two the facts which Professor Jevons has popularised will be found indispensable in the practical business of that time. Of his minor statistical essays, we should consider about the best Professor Jevons's investigations into the condition of our gold currency, his principal paper of this kind being one read at the Statistical Society as far back, we think, as 1868. The method of this paper was singularly able, and has since been followed with advantage by other inquirers. Of his smaller economical works, again, perhaps the most useful, we think, was his essay on *Money and the Mechanism of Exchange*, published as one of the 'International Scientific Series,' and containing a most complete popular exposition of the facts and theories of this question. It would not be easy, however, to

enumerate all the various economic and statistical essays which have come from Professor Jevons's pen. A collection of these essays was, we believe, in preparation at the time of his death, and we trust the work may have been sufficiently advanced to permit of its publication. What we have said will be enough to show, we hope, that there have been few more useful writers on these subjects, and that in losing Professor Jevons students of economics and statistics have lost a master whose place cannot again be filled. Professor Jevons's style was clear and calm, like his mind, eminently fitted for exposition, and not without a touch of humour. In this respect, also, his writings are a model of what writings should be on scientific subjects.

"It would be amiss not to add that, as a man, there have been few more genial and amiable than Professor Jevons. He was singularly modest and retiring in his ways, but to those who knew him he was thoroughly frank and sincere, and his conversation was most interesting and stimulating. Not the least worthy of his qualities was the purity of his devotion to science and literature, so that he remained content with the enjoyments his studies gave him, and with moderate means, without struggling for the rewards and excitement of a more active life. We believe there were few happier lives, and his friends can only lament the more the untimely accident which has cut short his career."

From the *Economist* of 19th August, 1882:—

"We have to record, with very sincere regret, the death of Mr. W. Stanley Jevons, who was drowned while bathing at Bexhill, near Hastings, on Sunday last, August 13th. Mr. Jevons has been known generally as by far the most able and original of our living logicians, and in the study of economic science his place, too, was among the foremost. These pursuits did not occupy the whole energy of a very intelligent and fertile mind. A capacity for chemistry and meteorology was included among his other powers. The frequent references to these subjects incorporated in his works showed that he had only needed to have developed his pursuit of these branches of knowledge to have taken a very high rank as a teacher in them also. Among powers of another order, his skill as a musician deserves notice. In this direction, also, he showed the same appreciation for the higher qualities in the art, as he did in his more serious pursuits of a scientific order. In his last letter to the writer of this notice, written immediately before he went to Bexhill, he referred to the pleasure and interest he took in music of a classical character.

"A mind so highly gifted will always be rare. There was a simplicity and an absence of display in Mr. Jevons's character which, while it endeared him to his friends, rendered him disinclined to any public display. Mr. Jevons's training had been in its early years of a practical description, with the concurrent advantages of sound educational training. He was the son of an iron merchant at Liverpool, and was born there on the 1st of September, 1835. His mother, who was a poetess of some standing, and edited the *Sacred Offering*, was a daughter of William Roscoe, the author of the

well-known biographies of Lorenzo de Medici and Leo X. Mr. Jevons's early education was received at the High School of the Mechanics' Institution, Liverpool, then under the rule of the late Dr. W. B. Hodgson, afterwards Professor of Political Economy at the University of Edinburgh. Mr. Jevons had thus the opportunity of an early training, under very competent instruction, in the science which subsequently he studied so deeply. At the age of 16 Mr. Jevons entered University College, London, and matriculated with honours in botany and chemistry. From 1853 to 1858, or from his eighteenth to his twenty-third year, he was assayer to the Australian Royal Mint, at Sydney, a post conferred upon him at the instance of Mr. Graham, of the Mint in London. While working there Mr. Jevons devoted his leisure to scientific pursuits, and the results of some thoughtful observations of the meteorology of the colony are embodied in his *Data Concerning the Climate of Australia and New Zealand.* Returning to England, he continued his studies at University College, won various distinctions, and took the degree of M.A. In 1866, after becoming fellow of his college, he was made Professor of Logic and Philosophy and Cobden Lecturer in Political Economy at Owen's College, Manchester. In 1876, he left Manchester for London to hold the chair of Political Economy in University College. This post, however, he resigned about a year since, from a desire to devote more time to working on his own pursuits. His principal works were dated as follows: in 1869, the *Substitution of Similars the True Principle of Reasoning* was published; in 1870, the *Elementary Lessons in Logic;* in 1871, the *Theory of Political Economy;* in 1874, the *Principles of Science,* and later, *Money and the Mechanism of Exchange.* Mr. Jevons's last work was the treatise on *The State in Relation to Labour.* A short time since he was considering the advisability of collecting and republishing his scattered papers, which had appeared in various magazines and other journals. We hope that this work was sufficiently advanced to permit its completion. Several of these papers were of considerable value, and though, unfortunately, they must now miss the finishing touch of the master's hand, their republication would be of service to economic study. The devotion he felt to his science, and his desire to promote its study, are best expressed in his own words—'We must not suppose that we have yet found out the thousandth part of the wonderful things which may be in time discovered by truly scientific reasoning and experiment.'

"The branch of science which, in Mr. Jevons, loses now its most original thinker has been unusually unfortunate in England of late years in losing its ablest exponents in the full maturity of their powers, and at an age when much good work might have been naturally expected from them. Bagehot, Cairnes, Cliffe-Leslie, and now Jevons have been recently taken from us by death, all comparatively early. The influence of their work will, however, be found in the training of the present generation of thinkers."

II.—*The French Railway Régime compared with the Systems Established in other Countries.*

From the *Economiste Français* of 1st and 8th April, 1882:—

"The existing French railway *régime* has of late met with much hostile criticism from advocates of various systems of reform, who have pointed out and commented upon what they consider the mistakes committed by the legislators who were responsible for its adoption. Among the many suggestions made by them, the advantage of transferring the State monopoly into the hands of the various companies, or of replacing the present companies by others, from which they anticipate the most favourable results, has been seriously discussed. The present system certainly has its disadvantages, but it would be a matter of some difficulty to point to any institution which is absolutely perfect; and the question is, whether the systems established in other countries, or the reforms suggested, do not equally leave something to be desired; while frequently those who most vehemently denounce the present system, fail to take into consideration the circumstances and conditions under which in the first place the railways were made, and in the second place the exigencies of weather and situation which determined the adoption of a particular plan. The scientific and technological history of railways, an interesting study, has frequently been related, but its economic and legislative history, a matter of much greater importance, is comparatively unknown, not only to the general public, but even to those who deal *ex professo* with railway questions. In France particularly, the system at present existing, undoubtedly a most complicated one, is very imperfectly understood, and the same may be said of the established *régimes* of other countries; this fact, however, does not deter the opponents of the present French *régime* from extensively quoting them in support of their arguments in favour of reform; and as these different *régimes* when taken collectively form an almost complete collection of all the systems of railway enterprise both as regards construction and management, it is not a very difficult matter to select one in some degree suitable for their purpose, which is put forward as a pattern and a model. We are of opinion that a study of the general railway organisation, its origin, the different forms which it has taken, and its results, would prove particularly interesting at the present moment; and the time is perhaps the more opportune as an international congress has so recently been sitting to consider the whole question of general railway organisation. Such a study, if undertaken with a mind unbiassed and unprejudiced, would prove not only instructive in the highest degree, but would afford ample material for reflection; and to the student of railway history, the third volume of a work lately issued by M. Leon Aucoc, Membre de l'Institut (Académie des Sciences Morales et Politiques), entitled, *Conferences sur l'Administration et le Droit Administratif, faites à l'Ecole des Ponts et Chaussés*, containing as it does a mass of useful and interest-

ing information, would prove most invaluable. It was only very recently that M. Paul Leroy Beaulieu recommended this work to certain persons who had applied to him for information respecting the relations of the State to the various French railway companies.

"M. Aucoc's work must also be especially commended as an authority on administrative law, chiefly in so far as relates to public works; it is therefore of great importance as a guide to the engineering student.

"The present article will be mainly devoted to the consideration of the author's first chapter relating to railways, in which a variety of historical and statistical information is to be found; to this information, complete and exhaustive as it is, there will be comparatively little to add.

"We have already called attention to the incongruities and diversities of the bases on which railways were established both in France and elsewhere, and have pointed out how unquestionably those bases were open to criticism, and particularly as regards France; at the same time it would be almost impossible to find a system to which exception could not be taken, and we are of opinion now that railways have had a lease of half a century, that if it were possible to sweep away all existing legislation, and legislate entirely afresh, to proceed in fact to an entire railway reorganisation, even then the establishment on a better and firmer basis would be an exceedingly difficult task, if not almost impossible; it is easy then to appreciate the difficulties and embarrassments experienced by statesmen, financiers, and economists fifty years ago, when brought face to face with an invention so strange to them and so thoroughly unforeseen as the railway. They suddenly found themselves in possession of a scientific invention and a motive power hitherto unheard of, and the question arose how to turn it to the best account. The difficulties were met and the questions answered in a practical manner by the English and Americans, who took active measures to utilise at once this new invention and obtain the best results therefrom; not so by the French, who although they boasted even then of being at the head of civilisation, approached the question in a far more timid and hesitating manner. France at first looked very suspiciously upon this new English invention, and was very sceptical as to its ultimate success. Even the French *savants*, including the great Arago himself, expressed the opinion that the wheels of the engine and of the carriages would not take a sufficiently firm grip of the polished rails to enable the train to advance, but that they would rotate only without any actual progress being made. So it will be seen that it was not until some time after the railway system had been inaugurated in England, that its adoption found a place in France. But when, however, it was discovered that the trains not only moved but travelled at a high rate of speed, and it was found that in England and America not only had railways been constructed, but that passengers and goods had been already carried on them, the French finding that this invention hitherto despised had proved such a signal success, determined in their turn to construct railway lines; but here again the initial difficulty presented itself—how to

commence operations and on what basis to establish the system. There were at that time but few French economists, and little importance was attached to their views and opinions. Adam Smith, Jean Baptiste Say, and other well known scientists had clearly established the principles on which roads and canals should be constructed, but none had foreseen the introduction of railroads. It is curious, however, to note the following remarks made by J. B. Say in the fourth edition of the *Traité d'Economie Politique*, published in 1819 (vol. ii, chap. vi). 'Failing canals, it is within the range of possibility that cast iron rails may be laid down for the purpose of establishing a communication between one town and another. Vast as the first outlay would undoubtedly be in an undertaking of this description, there can be very little doubt that it would eventually become a great financial success, and amply repay the expenses incurred in construction and maintenance. These rails firmly fixed in masonry would be eminently adapted for the transport of passengers and goods, as they would not only run easily over them, but would avoid the shaking and jolting to which they are necessarily exposed in carts and waggons. Vast enterprises of this description are undertaken in those countries where capitalists are not afraid of the first outlay, and who look with confidence to a speedy return of their capital together with good interest.' Thus we see that J. B. Say had in view the possibility of a general adoption of the tramway system; but although at this time the steam engine was in existence, he does not appear to have gone so far as to predict that one day its uses would be adapted to the traction of carriages and trucks on these cast iron rails. Another point which appears to us to have escaped his notice is, that the adoption of these rails must necessarily effect a complete revolution in transport economy. As a matter of fact, roads, rivers, and canals are open and free to all; but the adoption of cast iron rails implies a monopoly, as only a single file of carriages can at one time travel over them. When it was merely a question of roads which were open to all the world, the position of the State as regards them was clearly defined, and although Adam Smith advocated the adoption of a concessionary system, there was a concensus of opinion that all questions relating to the construction of roads, the establishment of tolls, &c., should be left entirely in the hands of the State. The case, however, was very different when the railroad scheme was first introduced; many fresh difficulties then presented themselves, and a host of vexed and complicated questions arose as to the powers which should be exercised by the State in the control of the projected railways. These problems did not, however, stand in the way of the English and Americans, who looked at the matter in a purely practical point of view, and whose chief difficulty appeared to be how to establish railway lines as rapidly and in as great a number as possible; and in this matter, faithful to their traditions, they trusted not so much to the State but to the energy of private enterprise to develop the scheme and turn the new invention to advantage and render it a financial success. M. Aucoc says, 'as regards England, in the matter of railways, private enterprise at once took the initiative, it settled the basis on which the system was to be established, and the only

part taken by the Government was to sanction certain schemes which were submitted to them, and to insist upon the strict observance of certain rules and regulations made in the interests of the general public.' It was soon found that lines were being rapidly constructed, and it was by no means an uncommon circumstance to see rival companies running their lines through the same districts. In the United States, the conditions are even more favourable as regards competition; there, there was no lack of space, the price of land was cheap, and materials for construction could be obtained at an almost nominal rate, so that the undertaking of establishing railway lines in that country was not attended with such a serious outlay as would be necessary for the same purpose in England, France, or elsewhere. It is true that the development of the railway system was not effected in the United States without a great deal of unnecessary expenditure and waste of money; but when once commenced, it marched with very rapid strides. For example, in 1830 there were only 23 miles of railway open, while in 1840 this number had increased to 2,816; and in 1850 it amounted to 9,013 miles.

"We will proceed later to consider what were the results produced on both sides of the Atlantic by the adoption of the system of railway management by companies in preference to the State. The settlement of the question as effected in England and America was at the same time one of the simplest and most natural solutions of the railway problem. Another plan, that of the construction and working of the lines by the State, has been adopted in Belgium since the inauguration of the railway system itself, and it is probable that this system of State control was in a great measure due to the necessity of preventing the more important lines from falling into the hands of joint stock companies, over whom considerable influence might be exercised by their neighbour Holland; this, according to M. Aucoc, might have had considerable weight in assisting the Belgian authorities to arrive at a decision upon the question. Be that as it may, the State assumed the management of railroads in Belgium, and constructed 609 miles of rails. Somewhat later certain concessions were granted to private enterprise for the purpose of forming extensions and developments of the system. The total length of such concessions, which in 1855 only amounted to 351 miles, was increased in 1870 to 1,496 miles; but many reasons contributed to induce the Government eventually to repurchase a large number of the concessions granted. At one time it was for the purpose of preventing certain lines (the Grand Luxembourg for instance) from falling into the hands of a German company; at another on account of the formidable competition, which by dint of union and combination, had been set up by these companies against the State system. The total length of line so repurchased amounted to 793 miles. In a few cases concessions have been granted on special conditions, the company being required to construct the railway, the working of it to be in the hands of the State, and the company to be paid a yearly sum, consisting either of a part of the gross receipts, or a fixed sum per kilomètre. Norway appears to be the only European country where the entire

railway system, extending over 636 miles, 438 of which are narrow gauge, is in the hands of the State; almost everywhere else, in Germany, Austria, the Netherlands, Denmark, Italy, &c., in addition to the railways which belong to the State, there are many others managed by independent companies; but as a general rule in these countries there is a marked tendency on the part of the State to absorb these independent lines. This is particularly noticeable in the case of Hungary for instance, where private enterprise is not largely developed, and capital is somewhat scarce; but in Russia, on the other hand, where it was only after considerable hesitation and delay that the example set by the western powers was followed, a different order of things prevailed; in this country in the period 1838-57 there were about 663 miles of railways belonging to and worked by the State; it was not long, however, before a system of granting concessions was adopted, having many features in common with that practised in France. It is true that at one time, about the year 1861, the Imperial Government repurchased a number of these concessions, but this was not so much a repurchase as a transfer, for they were speedily granted to other companies, and as a matter of fact at the present moment only the Finnish lines, the total extent of which does not exceed 497 miles, are worked by the State. The number of concessionaire companies amounted last year to fifty, and of these four alone were proprietors of a network of lines extending over a territory ranging between 700 and 1,470 miles. The other companies were of minor importance, thirty of them in fact only working lines extending over a distance of 330 miles. Spain—another country somewhat backward in following the example of her European neighbours in taking up the new invention—commenced operations by granting concessions on the companies' simple application, in the same manner as in England, but with this difference, that the concessions granted in the former case were purely temporary. The law of the 3rd June 1855, provided for the possibility of lines being constructed and worked by the State, but up to the present none have been so constructed or worked. There have been many other laws promulgated on this subject since 1855, and one in particular, that of the 14th November, 1868, is mentioned by M. Aucoc; this deals with the question of public works, and particularly of railroads, and decrees that the construction of these latter, for which no subvention is required from the State, or declaration that as a public benefit they are urgently needed, may be proceeded with without let or hindrance from the Government, the latter not to interfere in any way either with the construction or working of the lines. But notwithstanding these facilities, and the subventions which were eventually voted, in 1870 for instance, in the case of a considerable number of lines, speculation has proceeded but slowly, in spite of assistance from the State, and but little advantage has been taken of the opportunities offered, the Spanish capitalists being very backward in responding to the Government appeal. Spain, on the 31st November, 1880, had only 4,469 miles of railroads of any general importance; it is true that there were 826 miles in course of construction, but as regards those lines which

would not be included in the category of important ones, there were only 182 miles in working order, and 81 miles in course of construction.

"We will now consider what has taken place in France since the earliest period of French railways. We have already pointed out that finding themselves face to face with the many complicated questions and difficulties which at the commencement of the railway period presented themselves, statesmen and financiers devoted all their energies to the serious consideration of the subject and to the settlement of the basis on which the system should be established, in order to ensure the best results, both as regards the general public and the State. The solution of these problems was not arrived at without great divergence of opinion, not only among statesmen and financiers but economists also, who differed very materially among themselves as to the best method of developing the railway system. The only class that appeared to be unanimous was that composed of politicians who had inherited the old autocratic doctrines. They loudly advocated the system of construction and working of railroads by the State, and in support of their theory they brought forward, among others, many very specious arguments. 'Is not,' they said, 'a railway simply a new description of road, and who has ever disputed either the authority or the duty even of the State to control both the construction and maintenance of public roads? Who will deny that facilities for intercourse, business, and commerce should not be looked upon merely in the light of advantage to individuals, but as a means of promoting the prosperity of the nation? Open competition is spoken of, but what competition can be engaged in here? Who would dream of granting permission to the first one applying for it, to dispossess the holders of land of their property in order to construct a railway wherever and whenever the applicant might think proper? It is absolutely essential that the State, by virtue of its sovereign authority, should intervene, and not only settle and apportion the districts through which the lines should run, but itself construct the railway; and as regards the working of the lines, that is clearly within the province of the State, and should unquestionably be undertaken by it. There seems to be no doubt that a monopoly in railway matters is inevitable, and this being so, the travelling public would assuredly suffer if the monopoly is to be in the hands of private companies, as they would then be to a very great extent at the mercy of certain speculators, who in order to enrich themselves and ensure large dividends, would levy black mail both upon passengers and goods, whose comfort and security would be but little studied by them. We cannot, therefore, insist too much upon the absolute necessity of the construction and management of railroads being undertaken by the State in the interests of the general public, as it clearly devolves upon the Government to be the guardian and supreme representative of their interests.'

"Widely opposed to these views were the opinions expressed by other economists, who pronounced themselves strongly in favour of open competition with but little or no State supervision, as they inclined to the belief that the interests of the general public and of

the companies would, or ought to be, identical, and that any interference on the part of the State in the working or management of the railways would create difficulties and dissatisfaction, and tend to militate against their general efficiency. A middle course, however, was taken by practical men, who advocated the adoption of the existing system (a somewhat complicated one it is true, but which has up to the present time fully justified the confidence which was placed in its efficiency) of granting concessions for lengthened periods, the Government reserving to itself the power, on certain conditions, to repurchase from the companies, and these latter being bound by the terms of their agreement to observe certain conditions favourable alike to the State and the general public. Public opinion has at length declared in favour of this system, which by the way is not based on any economical or political doctrine, but which established as it was with the object of ensuring the attainment of the most favourable results, has fully justified the expectations raised. Railways are, it is generally admitted, a public benefit, and there must necessarily be a more or less exclusive monopoly in them; but it is by no means indispensable, nor would it even be for the public good that this monopoly should be entirely in the hands of the Government; the exigencies of the case would be met if the various lines were placed under the superintendence and control of the State authorities.

"This would not be the place to enter into a long dissertation upon the results which have been effected by the French system, wrongly accused by some of checking the progress of the railroads towards perfection; or of defending it at any length against those who recommend the adoption of an exclusive system of State management, or the substitution of other methods of granting concessions for those now in existence. That is a task which has already been successfully accomplished by many well known writers, chief among them being the editor of the *Economiste Français*, who has written exhaustively upon this subject. We may, however, point out that by the light of past experience, it is evident that great benefits have undoubtedly accrued from the adoption of this *régime;* not only is this conclusively shown in our own country, but when we compare the effects in France with those resulting from different *régimes* in other countries, it is all the more apparent that success has attended the efforts of French legislators to establish a permanent and comprehensive railway system. If we look at what has taken place in England and the United States, we find that the experiment of free competition has been attended with serious disadvantages, in consequence of the means of conveyance being in a large number of cases handed over to a monopoly, different it is true from the French, but none the less a complete monopoly; and we can see no reason to assume that the English and American systems conduce more to efficiency, or that the requirements and convenience of the public are more studied in those countries than in France. And as regards the adoption of a system by which the State would entirely undertake the management and working of all railways, having considered it in all its bearings, we cannot see that its adoption by the legislature is pre-

ferable to the present system, or that the advantages which its partisans are pleased to attribute to it are not equally attributable to the present scheme; and it would certainly open the door to many abuses which are not to be found under the present scheme. The general public would find that there would be no greater security, the conveyance of goods or of passengers would be neither effected at an increased speed or at a cheaper rate, nor would the service be in any way better organised. As regards any dispute that might arise, greater facilities would certainly not be afforded to the public of obtaining a speedy settlement of any claims they might have against the railway for loss or damage incurred on the lines. In fine, looking at the question in every possible light, there can be no doubt that the acquisition of railways by the State is but a *pis aller*, and only adapted to those comparatively poorer and less developed countries who can in no other way become possessors of a railway system of their own.

"We will now proceed, taking M. Aucoc's excellent work as a guide, to study in what degree the entire railway system of the world has been developed, and its position at the present moment. In the third volume of M. Aucoc's *Conferences sur l'Administration et le Droit Administratif*, ninety-three pages are devoted to the consideration of the rise and progress of railways in France alone; and M. Aucoc is by no means an author who indulges in long and useless digression, but keeps strictly to his subject, and it would be difficult to point throughout the whole of these ninety-three pages to a single phrase, a word, or even a figure which is not absolutely indispensable in order to thoroughly illustrate his meaning. This in itself goes far to prove what a long and laborious task the creation of French railways must have been.

"Exactly half a century has elapsed since the first law was passed authorising a credit of 500,000 frs. to the Government to defray the expenses incurred in surveying the districts through which it was proposed to construct railroads; and even now the whole network of lines is far from complete, and no one can say that the system has yet been brought to that pitch of perfection which we may confidently hope some day to see it reach. It is, therefore, all the more surprising that thoughtful and practical men can be found to advocate the entire reversal of the policy which has led at the cost of considerable time and labour to the establishment of the present *régime*, and to commit themselves to the opinion that it is necessary in order to ensure a maximum of benefit with a minimum of cost, that an entirely new departure should be made in connection with the great carrying trade of the country. It would be different if our would be reformers were agreed amongst themselves as to the settlement of the basis on which a new system should be established, and the method to be adopted for the advancement of these better results; but while some recommend placing the lines wholly and solely in the hands of the Government, others equally in favour of a radical change are strongly of opinion that all that is required to ensure more profitable results is to dispossess the present companies of their property and place it in the hands of others.

" It would appear to us that the exercise of a little sagacity and ordinary common sense would be sufficient to arrive at once at the conclusion that it would be far better to accept the system as it is, and to endeavour to so far improve it that we may, at no distant date, reap all the advantages and benefits which are capable of being obtained from it. It would seem to us also, after a study of M. Aucoc's excellent work, impossible for anyone really to believe that the constitution of the important companies in the period 1852-57 and 1859, was conceived in a spirit of mere speculation, or as a stroke of policy on the part of the State, having for its object the establishment, as regards the companies, of a species of commercial and financial feudality.

" The concessions, both numerous and important, which were granted to the six large companies in 1859 and 1863, and the formation of the *nouveau réseau*, have been vehemently criticised. But what better scheme could have been suggested? Certainly the State might have undertaken, without taking into consideration the question of cost, in the first place the construction, and then the working of the lines, at the expense of the taxpayers. This would have been a very easy and simple solution of the problem, but at the same time a perfectly impracticable one, and fortunately it was not adopted. Then again as regards the completion of this *réseau*, was it feasible that the concessions should be divided among several entirely new and distinct companies, care being taken that the distribution should be perfectly equal? One obvious objection to this would be, and one that would naturally have been foreseen, that the majority of these new lines would for a long time remain unremunerative and even burdensome, and it would therefore be absurd to offer them to capitalists naturally desirous of obtaining as soon as possible a fair return on their capital invested. Only those large companies who were already in possession of lines in full working order were in a position to undertake the task, as their profits derivable from the paying lines would go towards covering the loss incurred on the unprofitable ones, and these unprofitable lines are more numerous than is generally supposed; and in this category are the railways which the State, coming to the assistance of those companies who were unable to successfully continue their undertakings, generously repurchased from them. Taking first the State *réseau*, there were in the year 1879, according to M. Aucoc, 1,007 miles of railway lines, 408 of which did not even make enough to cover the working expenses, chief among the defaulting lines being that from Orleans to Châlons-sur-Marne, a distance of 182 miles, and the deficiency on this line alone amounted to 20,272*l.*, and none of them have really been able to pay the guaranteed interest, calculated at the rate of $4\frac{1}{2}$ per cent.; we learn also from the *Bulletin des Statistiques*, published by the Ministry of Public Works, that the deficit amounted to the sum of 364,162*l.* Those lines which M. Aucoc terms 'second rate lines,' about 727 miles of the same *réseau*, realised 10,000*l.* less than their working expenses; and here again 382,586*l.* were required to make up the capital charges. Taking now what M. Aucoc terms the '*compagnies diverses*,' the lines from Somain to Anzin, and the Dombes and South-Eastern show a profit of 31,508*l.*

" Passing now to those railways which were ceded to the six large companies, we find that the receipts of those comprised in the new *réseau*, have since 1872 been invariably insufficient to cover the working expenditure. Coming under this head are railways with a length of between 600 and 900 miles, and it has been estimated that the maximum yearly deficit has amounted to 160,000*l.* and the minimum to 52,000*l.* Taking now the insufficiency to pay the capital charges, excluding the subventions by the State in aid of the companies, we find that dating from the year 1872, when it amounted to 4 millions sterling, there has been a steady and constant deficit; for example, in 1879 it even exceeded the enormous sum of 4,886,000*l.* There are but four or five lines with a total length of 340 miles, which realise each a net profit varying between 3,000*l.* and 15,000*l.*

" Fortunately for the companies, the State, and the general public, the returns yielded by the old *réseau* assumed in the period 1872-79 very considerable proportions; for example in 1872 the excess of receipts over working expenses amounted to 6,470,000*l.*; and in 1878, the year in which the maximum was reached, to 8,097,000*l.* The year 1879 showed a net gain of 7,808,000*l.*, and it must be borne in mind that a part only, viz., about 2,484 miles, and not the whole of the companies' lines have contributed to produce this result; had the whole extent of the system been taken, the net receipts would probably have far exceeded these estimates. M. Aucoc in his concluding remarks on the formation of the new *réseau*, says, 'one may easily imagine what would have been the fate of those new railways if the task of developing them had not been undertaken by those important companies who were in a position, owing to the great financial success which had hitherto attended the working of their trunk lines, to devote a portion of their profits to making good the deficiency arising from the working of the unprofitable lines.' It was found, however, that the task undertaken by these wealthy companies was more burdensome than they could bear, so recourse was had to the State, who came to their assistance by guaranteeing a certain rate of interest. On the 31st December, 1879, the companies were indebted to the State to the extent of more than 24,140,000*l.* It is well known that of late years the public exchequer has largely benefited by the introduction of railways, as in addition to the several millions of francs reimbursed, by the Eastern, Orleans, and Midi Companies, large sums have been collected in railway duties, taxes payable alike by the companies and the general public. We learn on the authority of the *Bulletin de Statistique* of the Ministry of Finance, that in the year 1879 a sum amounting to nearly 9 millions sterling was paid into the treasury, mainly derivable from railways.

" We may confidently ask, would a similarly successful result have been attained had the concessions been distributed among a number of insignificant companies? We are of opinion that it undoubtedly would not, as in the first place some of the more profitable lines would have been worked at an enormous profit to the particular company, without the State in the smallest degree benefiting. Again, it would have been a perpetual struggle with other

companies to make even sufficient to pay working expenses, and the probabilities are that in a great number of cases the State would have been obliged to come to the assistance of those who found themselves utterly unable to cope with their difficulties, and who stood face to face with ruin, unless indeed their unremunerative property were to be purchased by the more fortunate companies; in this case, however, the shareholders would suffer, as it is far from likely that they would be treated with the same generosity which not long since characterised the dealings of the State with a similarly unfortunate body whose property it saved from shipwreck. Finally, there would be in all probability an amalgamation of powerful companies, and the ultimate end would be complete monopoly, formed under conditions which would be favourable neither to the State, the general public, nor the shareholders.

"We have already touched upon the question of the results effected by railway legislation in England. There, it was at first found expedient not to interfere in anyway with the extension or competition of the different companies, and for a period of ten years, comprised between 1848 and 1858, this policy was pursued, the result being that the railway system extended with unhealthy rapidity, and the companies engaged in general and heedless competition with each other. They soon learned, however, from the experience of these ten years, the fallacy of pursuing a system which would inevitably lead to ruin, and therefore adopted the policy of amalgamation, which has been so successfully carried out, that since the year 1858 active competition between railway companies, at least as regards the question of rates and fares, has virtually ceased to exist in England. There was at first a great deal of opposition in Parliament to this scheme of amalgamation, but when it was found that a refusal to authorise it was met by the formation of a syndicate, which was practically equivalent, then all Parliamentary opposition was withdrawn. According to the Board of Trade reports, we find that on the 31st December, 1879, the total length of the railway system in England and Wales, viz., 12,538 miles, was distributed *nominally* between 222 companies, but of these 222 companies only 99 undertook the actual working of their own lines; and it is a significant fact that 14 companies had under their management alone the working of 10,899 miles; the most important being the Great Western, with an extent of 2,144 miles; and the smallest the South Eastern, with 333 miles. In Scotland there were 34 companies, with a total length of 2,283 miles; but of these eight only worked their own lines, two of them having respectively a length of 939 and 850 miles. In Ireland there were 39 companies, with an extent of 2,283 miles, but of this total length 1,741 miles are in the hands of five companies.

"The question of competition by water in the United Kingdom should next be considered. In this matter, not only have the railways little to fear from canals, but they have even succeeded to a very great extent in rendering competition by sea ineffective and insignificant. We will again quote M. Aucoc: 'Of the 4,142 miles of canal navigation, 1,720 have fallen by purchase into the possession of railway companies, the policy of the latter being to buy

whenever opportunity arose; and as regards the remainder, the companies have come to such an understanding with the owners as to the establishment of a goods tariff, that the necessity of purchasing the canals no longer exists, the company guaranteeing to the proprietors a yearly income. Then again, when the proprietors of any canal refused to come to an understanding or compromise with the railway companies, the latter defeated competition by reducing their rates, or by purchasing important links in the system of navigation, and thereby discouraging through traffic from the independent canal.' There remains then only competition by sea to be considered. It is an established fact that in the majority of the English seaports the administration is not in the hands of the Government, but is vested in the hands of local authorities or independent harbour and dock boards; in fine, they are controlled by those with whom it is possible to treat, and who can, if they wish it, hand over their entire powers or their property to any railway company. With these the railways have entered into negotiations, and at the present time they are in possession of forty-three ports; they have besides organised a regular service of steamers, and thus, thanks to the system of non-intervention on the part of the State, railways have obtained possession of all the means of communication both on land and water. As to State control, it was previous to the year 1873 practically non-existent, all that the Government could do was to exercise an indirect influence in railway matters; for example, in the event of the companies applying for fresh powers for the purposes of extension or construction, or for fresh borrowing powers, the necessary authorisation was only granted on condition that certain regulations were observed, which the Government insisted upon in the interests of the travelling public.

"It was only in 1873, after a long inquiry into the question of competition and amalgamation, that Parliament appointed a railway commission, on whom the duties were imposed of considering the regulations hitherto authorised by law relating to the reception or forwarding of goods, and the application of tariffs; to examine any agreements that might be entered into between the companies for the maintenance or working of lines conceded, or of canals, agreements which in future would be invalid if not approved of by the commission. It was also to form a kind of tribunal whose functions were to examine and decide upon the differences which might arise between the railways and the postal administration. The commission consisted of three members appointed by the Crown, and was to last for five years. After having considered and decided upon 127 cases in the five years comprised between 1874 and 1878, the labours of the commissioners in 1879 became comparatively light, as there were only in that year four cases submitted to them for consideration. In the last report which they issued, the commissioners laid great stress upon the necessity of the sphere of their operations being extended.

"Although the principles followed in the management of English railways have been moderately successful as regards the general public, yet the shareholders in the different companies

cannot be said to have benefited in a corresponding degree, their investments having frequently proved very unremunerative; for instance, during the crisis of 1845-52, it is estimated that the depreciation in railway scrip amounted to as much as 14 millions sterling. In 1879 even, a large number of shareholders, representing a capital of more than 40 millions, received no interest at all on their shares; and this, according to M. Aucoc, is by no means an uncommon occurrence; and interest only at the rate of between 1 and 3 per cent. was paid on shares valued at 38,600,000*l.* Those who received more than 5 per cent., represent little more than a capital of 120 millions; and yet the traffic on English railways is enormous, as the figures for 1879 in the following table will show:—

1879.	Number.
Total number of passengers carried	563,179,732
	Tons.
„ weight of goods	215,583,162
	£
Gross receipts	57,776,700
Receipts from passengers	22,579,724
„ goods	33,479,697

"In the United States the same system has been adopted on a larger scale, but with somewhat similar results to those experienced in England. It is well known how rapid was the development of railways in this country, and how immensely the general public has benefited by their introduction, yet but few people have any idea of the enormous expenditure incurred in this progress of railroad enterprise, and at what a cost these benefits were conferred. M. Aucoc tells us, and he bases his statement on the authority of certain tables prepared by MM. Lavoinne and Pontzel, that at the end of 1875 the total expenditure incurred in the construction of the lines then existing amounted to 949,929,000*l.*, and this represents an average cost of 12,726*l.* per mile. The average cost per mile for the two trans-continental Pacific lines up to the same period was respectively 23,700*l.* and 22,350*l.*, and in the construction of some of the other lines the average expenditure was considerably in excess of these amounts, as will be seen in the following table:—

Railway.	Length of Line.	Average Cost of Construction per Mile.
	Miles.	£
Delaware-Lackawanna	190	28,660
New York Central and Hudson	608	31,050
Erie	214	44,440

and the traffic receipts for the year 1878 were as follows:—

Length of Line Open.	Net Receipts.	Per Mile of Line Open.
Miles.	£	£
78,680	39,015,634	507

"These figures which we have quoted will convey, however, but little idea of the immense sums that have been swallowed up in the furtherance of schemes which have turned out to be disastrous failures. To obtain an estimate of these amounts we must follow the example of M. Aucoc and refer our readers to the *Commercial Chronicle* of February, 1876, where, in an article devoted to the consideration of this subject, it was stated that the number of companies who were declared bankrupt during the years 1873-75, amounted to 196, and the amount of their liabilities to 166,200,000*l.* A fresh crisis arose in 1880, and great excitement was occasioned at the time by the failure of the Philadelphia and Reading Railway.

"In America the same peculiarities which characterised the earlier progress in railway enterprise in England were observable, the spirit of rivalry among the different railway companies soon became rampant; they also engaged in general and heedless competition with one another, until they found out that it would considerably strengthen their position, and that further advantage would accrue to them, by amalgamating with smaller companies. Combinations were then formed, and complete monopolies established to such a degree that the authorities were at last obliged to interfere to protect the public against the flagrant abuses and injustices constantly being committed. M. de Fontpertius calls attention in an article in the *Economiste Français* of the 6th March, 1880, reviewing a work issued by Mr. Nimmo, the Chief of the United States Statistical Bureau, to a system which prevailed in the United States of equally distributing the traffic between the different companies. This, in American phraseology is called the 'pool' system, and is applicable either to the whole of the traffic in the same direction, or to certain special goods. A syndicate of this kind was established on the 15th December, 1878, in New York, and composed of thirty-eight companies, concessionaires of all the lines leading from the west and north-west to the shores of the Atlantic. One of the most successful New York financiers, Mr. Gould, has entirely in his own hands 7,762 miles of railways. It is evident that the system of competition and *laissez faire* which prevailed both in England and America led in a few years to the establishment of powerful companies far more important, and more to be feared than our own, for they have succeeded almost entirely in evading any interference or control on the part of the public authorities.

"It must be far from the desire of any European countries to see all the means of communication wholly and solely in the possession of private speculators, without any control on the part of the State. The majority would certainly prefer that power should be vested in the Government to control, if not absolutely direct the action of the railway companies; the majority of the European nations have accordingly established their railway systems on a basis somewhat similar to that adopted in France. And there are many who fearing the abuses which may be engendered by excessive speculation, even when to a great extent limited by stringent regulations, have preferred to hand over the greater part, if not the whole of the lines, entirely to the State. This is the policy which

was followed in Belgium and Germany, with results too well known to need recapitulation here; and it is noticeable that wherever the principles of State management have been followed, the results have been the same. State railways have invariably cost more to construct and work than those undertaken by companies; their gross receipts naturally depend upon other circumstances than those in connection with the actual method of working; but it is not so with the net receipts, which are generally *nil.* As a rule the total receipts are barely sufficient to cover the expenses. We must, however, make an exception in favour of Norway: in that country the State railways having a total extent of 636 miles, show rather more favourable results. Of these 636 miles of railroads belonging to the State in Norway, 438 miles are narrow gauge lines, and the total expenses incurred in construction, according to M. Aucoc, amounted at the end of 1879 to 4,197,320*l.*, or at the rate of 6,600*l.* per mile; but taking those lines having a width of about $4\frac{1}{2}$ feet, the cost was 1,001,570*l.*, or a mileage expense of 8,495*l.* The total gross receipts derivable from the working of the Norwegian lines, amounted in 1879 to 219,840*l.* The net receipts on the broad gauge lines, of which there are only three, amounted respectively to 24*l.*, 44*l.*, and 424*l.* Taking the narrow gauge lines, on one there was a net profit of 136*l.*, the other two showed a loss of 12*l.* and 24*l.* respectively. The average interest on the capital invested in the whole of the Norwegian lines, is at the rate of about 1 per cent.; there is only one single line, with a length of 42 miles, which pays as much as 5 per cent.

"It appears that since the inauguration of railways in Italy, every variety of system has been adopted at one period or the other, and the State has had under its consideration for some years the advisability of buying back the railways; the system of repurchase has in fact been already applied to two companies—the Alta Italia and the Roman—dating in the former case from 1875, and in the latter since 1880. The law of the 18th July, 1878, decreed that the working of the Alta Italia lines should be undertaken by the State, but this was put off from time to time, and it was eventually decided that it was not to come into operation until the 31st December, 1881. In the meanwhile a commission of inquiry, composed of senators and deputies, was appointed, and after repeated sittings they unanimously decided that it would be better, both in the interests of the general public and the State, for the management and working of railroads to be left to the energy of joint stock enterprise; this recommendation was embodied in their report, submitted to the Government on the 31st March, 1881. They suggested that the lines which were to be so worked should be at once handed over by the State to those companies who were willing to undertake the task. The company in each case to provide all the rolling stock and furnish all the funds necessary for working them; certain sums to be taken out of the gross receipts to be retained for the repair and improvement or extension of the lines, and the remainder to be divided between the companies and the State. Any question of reduction in rates or fares to be submitted to the approval of the Government, and the latter to have the

power to lower them whenever they thought proper, with the proviso that in the event of any loss being incurred through their action, it was to be made good.

"On the 31st December, 1880, Italy possessed 5,456 miles of railways. The State *réseau* being composed of 2,422 miles, of which 795 miles were worked by the Southern Railway Company. The lines conceded to companies and worked by the State, amounted to 594 miles, and there remained 2,440 miles, which were distributed among ten companies.

"The railways of Austro-Hungary have experienced many vicissitudes, but time will not permit us to follow them through all their varying fortunes; even could we do so, there would be comparatively little to add to the valuable information on railway matters, not only as regards Austria, but also Italy, Germany, and the United States, which has been given by many able writers who have dealt exhaustively with the question of economic progress in these countries.

"In concluding this *résumé*, we cannot do better than quote one of the recommendations of the Italian Parliamentary Commission, with which we unhesitatingly agree, namely, that it would be better for the working of railways to be entrusted—not altogether abandoned—to private enterprise."

III.—*Additions to the Library.*

Additions to the Library during the Quarter ended 30th September, 1882.

Donations.	By whom Presented.
Argentine Confederation. Buenos Aires. Boletin de la Oficina de Estadistica. Año II. Núm. 1. 1882	Statistical Bureau
Austria and Hungary— *Statistisches Jahrbuch.* La. 8vo.— VII Heft, für 1879. (Zweite Abtheilung) Landes- und Grundentlastungs-Fonde, Dotirte Politsche Fonde für Zwecke des Cultus und Unterrichts, Gemeinde- Haushalt. (National Finances) ..... X Heft, für 1879. Sanitätswesen und Wolthätigkeits- Anstalten, Viehseuchen, Brand- Statistik, und Hagelschäden. (Sanitary Measures, Charitable Institutions, Cattle Plague, Fires, Hailstorms).... I Heft, für 1881. (Erste Abtheilung) Flächeninhalt, Bevölkerung, Wohnorte. (Area, Population, &c.) (Zweite Abtheilung) Bewegung der Bevölkerung. (Movement of Population) ..... V Heft, für 1881. Klerus, Lehranstalten, Periodische Presse. (Clergy, Colleges, Periodical Press)	The Imperial Central Statistical Commission
Die Hauptstadt Budapest im Jahre 1881. Resultate der Volksbeschreibung und Volkszählung vom 1 Januar, 1881. Von Josef Körösi. 232 pp., map, diagrams, &c., la. 8vo. Berlin, 1882. (Census).....	Joseph Körösi, Esq., Budapest

Donations—Contd.

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JOURNAL OF THE STATISTICAL SOCIETY,

DECEMBER, 1882.

The Utility *of* Common Statistics. *The* Inaugural Address *of* Robert Giffen, Esq., President *of the* Statistical Society, *delivered on* Tuesday, 21*st November*, 1882.

In commencing our labours for another session, we are painfully reminded that during the past twelve months the Society has sustained two heavy losses, in the death of Mr. Newmarch and Professor Jevons. At a meeting like the present, some tribute is due to the memory of these distinguished members. To some extent a record of Mr. Newmarch's death and services has already been preserved in our proceedings, but something, I feel, ought also to be said at this inaugural meeting, considering his many and diversified statistical labours, and the length of the period during which he was identified with us, first as Secretary and Editor of the *Journal*, and afterwards as President. The death of Professor Jevons—all the more to be regretted as a lamentable accident—has occurred since the last meeting of last session, and this is the first opportunity we have had of paying a tribute to his memory.

With regard to Mr. Newmarch, it will be unnecessary to go over the record of his life in detail, or to enumerate his various works: of these a very full account will be found in the March number of the *Journal* of this year. What I should like to do now, is to put on record the special consideration in which he was held here for his knowledge of economic statistics, especially trade and banking statistics, and his skill in using them. He was remarkable not merely as a statistician, but as a man of business and as an economist, and his special *forte* as a statistician was to throw light on problems connected with the theory of business—especially banking—and on the applications of political economy to the real world by means of statistics. In labours of this kind he was among the first in the field. Mr. Tooke, whom he recognised as a master, had preceded him as a pioneer, showing the way to reason out disputed points in the theory of currency and banking by statistical illustrations from actual business experience: his demonstrations on such points as the dependence of prices on credit, and the fact of a rise of prices pre-

ceding and not succeeding the expansion of a paper currency, being still among the best examples of the right use of statistics in economic discussions. But Mr. Newmarch followed in the steps of his great master with a command of facts, and a power of analysing and grouping figures, which in the same field were at that time without example. His most signal achievement was the preparation of the last two volumes of the "History of Prices," a book well known here, though it has been long out of print. The information and comments in those two volumes on the great economic changes about the middle of the present century, including the introduction of free trade, the Bank Charter Act, the Irish famine, the French revolution of 1848-51, the gold discoveries in Russia, California, and Australia, and finally the Crimean war, make them still a most valuable record; while the discussion on many points of banking practice and economic theory, especially on all points relating to the use and abuse of credit, and the periodicity of movements in trade, remains to this day the fullest exposition on these topics to which the student can be referred. There are better books perhaps on single points, such as Mr. Bagehot's "Lombard Street," in which the constituent elements of the money market are described, and the theory of a bank reserve is set forth and illustrated; but the number and variety of topics in Mr. Newmarch's book, and the way in which the various economic movements of the time are grasped and set in one picture, make it of unique value. Whether it is the effect of the gold discoveries in bringing new resources into the money market, and giving a vast impetus to trade, or the effect of a great movement of migration on the trade of old and new countries alike, or the financial consequences of a great war, Mr. Newmarch is at home in the discussion. Apart also from the light it throws on the special questions treated, and as regards which it may be of course superseded by fuller and later statistics, and by wholly new circumstances, the book must long remain of value, I believe, as a specimen of method and of what can be done by the use of statistics. Indirectly, I believe, it has been the beginning of much financial writing, as it is really the parent of a book like M. Neumann-Spallart's "Annual Review of the World's "Trade" on the one hand, and of much of that writing on "trade "and finance" and those columns of "city notes" which we now see in many newspapers. Mr. Newmarch, in fact, popularised the idea that the daily changes in the movement of business can be generalised and referred to the working of the laws of human nature, and in a thousand ways the idea has been worked out and made useful to the world. That in the end the course of business will be better understood generally, with useful results both to business men and to society, there can be little doubt.

Besides thus recognising Mr. Newmarch's special place as a statistician, we are bound to say a few words here on his special services to the Society. Among these I would place in the first rank his labours as editor of the *Journal*. Looking over the back numbers, it may be perceived that from the time he took the *Journal* in hand, there was not only a considerable improvement in the miscellaneous information, which was more particularly in his own care, but an improvement as well in the general character of the papers read at our meetings. One explanation of this improvement must of course have been the steady growth of the Society in numbers and resources, and in the standard of statistical excellence; but the improvement was not altogether a spontaneous growth from below, it was encouraged from above in a variety of ways. I can speak from personal knowledge of Mr. Newmarch's exertions to make the best use of his materials, and to diffuse a genuine love and appreciation of the study he favoured. It was extremely characteristic of him that to the last he was strongly interested in young men. Wherever he could see any talent or liking for economics and statistics in a younger generation than his own, he was the first to applaud. I am proud to acknowledge for myself that I owe the beginning of my close connection with the business of the Society to Mr. Newmarch's kindness, and I have had reason to observe in many other cases his warm interest in youth, and the pains he took to encourage and bring others forward. His services, however, were manifold, and it is only fitting that as he identified himself so closely with us, we should do honour to his name. The success of the Newmarch Memorial Fund must be to all of us a matter for satisfaction. The memory of the great services he rendered will be perpetuated in an appropriate manner.

In the death of Professor Jevons the Society has also sustained a very great loss. Partly because he was so much junior to Mr. Newmarch, and had probably many years of life left in which to render us distinguished service, and partly because of the engrossing nature of his literary work, which made formal business distasteful to him, Mr. Jevons never took the prominent part in the daily work of the Society for which his eminent gifts and labours as a statistician so well qualified him. He was for some years, however, one of our secretaries, a regular attendant of our meetings, and a frequent contributor to the *Journal*. In the proper work of a statistician, moreover, there are few men who have left a better name on our records. I need only refer specially to three of his principal works. Twenty years ago, when he was still comparatively a young man, his book on the depreciation of gold arising from the gold discoveries justly attracted no small attention, both from the completeness of the method employed, and the

striking character of the conclusion which he came to—that while there had been depreciation to a moderate extent, there had been no such depreciation as many great economists had anticipated. A few years afterwards his book on the "Coal Supply" drew attention to a problem which is inevitably raised by the limited character of the English coal field, and the rapidly increasing demands upon it. This book had a wide success of notoriety, and it was unfortunate, perhaps, that it was only too popular, the public, which seldom makes nice distinctions, running away with the notion that Mr. Jevons predicted the actual speedy exhaustion of the English coal supply. This of course was nonsense. His real conclusion, however, viz., that one of the present conditions of English prosperity was rapidly altering for the worse was undeniable, and was amply justified by the experience of the coal famine of 1873. Few more interesting books have, perhaps, been written; and there are few better examples of the kind of statistical works which ought now, with the increasing breadth of statistical data, to be more largely written, viz., those dealing with the characteristic social and economic problems of the age. It is to such works statesmen and politicians must look for a right comprehension of their task. Shortly afterwards, in 1868, Mr. Jevons read a paper on the state of our gold coinage, in which the same thoroughness and completeness exhibited in all his statistical works was again conspicuous, and which has since been the model of more than one similar inquiry. Besides these, Mr. Jevons wrote many smaller works, which were all characterised by great completeness of method; but these three larger works are quite sufficient to found his reputation. They all show inventiveness and resource, and a careful attention to every point which can qualify the figures so that the real facts, and not the apparent ones, are brought out. An index number, such as he used in the first paper of all on the gold question, has proved an instrument of great value since in all inquiries on prices; and for this institution of an "index "number" we may consider ourselves indebted to Mr. Jevons. In the later years of his life Mr. Jevons became even better known as an economist and a writer on logic than as a statistician, the place he took being a high one; and without discussing his work in that capacity, we must recognise how his qualifications for other departments of literature were no disqualification, but the reverse, for the study and practice of statistics. His statistics would not have been as good as they were if he had not had wider interests, and a remarkable faculty for clear scientific exposition in other branches of science.

Such are the two men we have lost within the short period of twelve months. The loss is a heavy one; but few would have been

more ready to recognise than those we have lost, that the work remains, whatever becomes of the individual. With Mr. Newmarch this feeling, as I have already hinted, was always present. It was always of good work in statistics and not of his own good work he was thinking. If younger men could be induced to come into the field, he was but too well pleased to give up the task to them, so long as the work was done. His example and spirit will be handed down, I trust, through many generations of labourers at these meetings. In another point also the example and spirit of both Mr. Newmarch and Mr. Jevons, it may be hoped, will be imitated. I have already glanced at the point, but it may be specially emphasised. It is that they were neither of them specialists, but they were both otherwise distinguished—Mr. Newmarch as a man of business and an economist; and Mr. Jevons as a *literateur*, a man of science, and a logician. It will be an unfortunate day for us if men of business like Mr. Newmarch, and men of general literary eminence like Mr. Jevons, do not take an interest in our pursuits. Statistics are related to so many different sciences, and the knowledge of them is so essential to the politician and historian, that there is no study which is more certainly failing to obtain its proper place, if it is not known to and made use of by those who are identified with other pursuits and by men of good general culture.

I am sure you will not think I have taken up too much of your time in doing honour to the friends whom we have lost. I pass on with some diffidence to deal with some topic of general interest, such as you have been accustomed to have dealt with in their introductory addresses by my predecessors. In recent years the field has been very fully occupied. You have had such papers, for instance, as that of Mr. Lefevre, on the use and abuse of statistics, covering a great deal of the ground for discussion on the theory of statistics. You have had other papers by experts in particular branches of statistics, such as the addresses by my distinguished immediate predecessor, on the agricultural depression of the country and the probable future of the agricultural industry. The field of new observation has thus been greatly reduced. It has occurred to me, however, that without attempting a new discussion on the theory of statistics, or giving an address on some particular topic of urgent interest, I may perhaps be able to say something useful, by pointing out some of the uses to society of the more common figures of statistics, especially those figures which assist in modifying or directing the political thought of the time, or in presenting problems for politicians and philosophers to consider, even if they do not much assist in the solution. The

greater successes of statistics, and their main uses, though not so well known as they should be, are nevertheless fairly understood. The construction of life insurance tables, for instance; the means of comparing rates of mortality in different places, and between the same places at different times; the constant utility of statistics in political discussion, and their equal utility in daily business—are all matters tolerably well known and admitted. But what seems not to be so well understood is our indebtedness to the common figures of statistics for many wide and far-reaching political ideas, which influence and guide political thought and action and philosophic speculation insensibly. With the systematic collection of statistics continued for many years, there has come to be published a whole library of statistical annuals—whether they are official statistical abstracts or *annuaires*, such as many countries now publish, or unofficial publications like the "Annuaire de l'Economie "politique," or the "Statesman's Year Book," or M. Neumann-Spallart's "Annual Review of the World's Industry." These books, it seems to me, besides having many practical uses, supply a necessity of political thought at the present time, and are constantly and insensibly guiding political and philosophical speculation. What I propose to discuss to-night, then, are some of the more common figures which lie on the surface of the most accessible books. As with other good and common things, we have become so used to such books that we hardly know what we should miss if they were blotted out,—if public men and writers were without them, as in fact they were without them until about half a century ago. If we attempt to realise what we should do without such books, we shall not fail to see that statistics have many unsuspected uses, and not least are they useful for the knowledge they insensibly diffuse throughout the world.

I shall deal more especially with the most common figures of all, viz., those of population. The utility of the most general notion which we derive from statistics of the distribution of the earth's surface among different races and nations is palpable. We can see at once that a small corner like Europe is closely peopled by the European family of nations, whilst the northern peoples of that family also possess a large new field of territory in North America, Australia, and Northern Asia, and the more southern peoples a large new field of territory in Central and South America. The European family is thus *de facto* in possession of a large tract of the earth's surface for its own habitation, perhaps a half or more of the area available for producing the food of civilised races. Further consideration would show what races in particular, among the nations of Europe, have this inheritance, but the point is, the

predominance of the European race in mere extent of territory, coupled with the peculiarity that the bulk of this population is still living on a comparatively narrow tract in Europe. The rest of the world—China, India and Africa—is possessed by races of greatly differing type, on whose territory Europeans do not press as colonists, though they may settle in small numbers as governors, or traders, or both. Granting, on the average, a difference in point of material strength per unit of population between these European and all other races, it is easy to understand at once the idea that the future of civilisation belongs to the European group, and that the problem of how the other races are to live in harmony with the European group without being jostled, and in what way they are to be affected by the European civilisation, is one of the most curious presented for the solution of modern societies. If the European numbers were less, the problem might well be whether European civilisation, in spite of its assumed superiority in type, could maintain itself. The numbers and rate of increase being what they are, it is easy to see that the main problem resulting from the relations of the European and non-European races cannot be whether the European civilisation will be able to maintain itself by force, but how it will be affected by its varying relations to the other races.

Confining ourselves again to the European group, and first of all to the nations within European limits, another leading fact in international politics is immediately suggested by the statement of the numbers of the people. This is the existence of five leading powers—Russia, Germany, Austria, France, and the United Kingdom—each greatly stronger than any of the other powers not among the five, except two; each big enough to "take care of "itself," though there are, of course, differences of strength between them; and besides these, the two others excepted, viz., Italy and Spain, which come short of a first place, but by a less degree than the minor States. All these relations of the great powers are based largely on the mere enumeration of the peoples. Three out of the five, viz., France, Austria-Hungary, and the United Kingdom, have each about the same population, in round numbers, 35 to 38 millions; one of the others—Germany—has about one-fourth more, and Russia only has a much larger number in Europe, viz., 80 millions. While numbers, therefore, are not everything, or Russia would be preponderant, which is notoriously not the case, and Germany would not, as it does, count for more than in proportion to its numbers, and the United Kingdom would not have a peculiar position among the others, on account of the undeveloped state of its military resources on the one side, and the immensity of

its wealth and latent strength on the other side, yet it is obvious that the mere numbers are a most vital element in appreciating the political position of these five powers and the lesser powers around them. Perhaps if statesmen were always wise, and rulers and peoples free from prejudice and passion, the popular knowledge of the figures would be even more serviceable than it is in demonstrating the absolute insanity of offensive war. It is impossible to conceive what object any of these five great powers could gain by the misery and suffering of war with another, adequate to repay that misery and suffering: the very magnitude of the wars forbids the possibility of gain.

The past history and future prospects of the balance of power among these nations are also illustrated by a mere consideration of the numbers. We have only to glance at the population of the different States as at the close of the great wars in 1815 and as they are now, to see that great changes have happened—

	1815.		1880.	
	Population in Millions.	Per Cent. of Total.	Population in Millions.	Per Cent. of Total.
Russia in Europe.....	48	33	80*	34
Germany†	21	14½	45	19
Austria-Hungary	28	20	38	16
France	29	20½	37	16
United Kingdom	17	12	35	15
Total	143	100	235	100

Thus in 1815 a compact France possessed several millions more than the population of Germany, nearly twice that of the United Kingdom, and more than half that of Russia. Austria-Hungary also came near, as it now does, to the French numbers. Now the population of Germany considerably exceeds that of France; that of the United Kingdom is nearly equal, and that of Russia is more than double. These facts correspond very closely with the transfer of military preponderance on the continent from France to Germany, and with the increasing prominence of Russia, which would probably be much more felt but for the simultaneous growth of Germany. They also explain why it is that the United Kingdom, with an economic and social development resembling that of France

* The exact figure by the last census is 84 millions, but I have preferred to be a little under the mark so as to allow a little for more exact enumeration in the later censuses. For the present purpose the difference between 80 and 84 is immaterial.

† Germany was also much divided in 1815.

in many respects, has fallen less behind in the political race; why its relative position among European powers, though not what it was fifty years ago, is less weakened than that of France has been. Fifty years ago it was the leader among powers which were occupied in restraining France, singly a greater power than any. Now it is about equal in numbers to France, although its whole position is changed by the fact that no power, not even Germany, preponderates to the same extent as France once did.

As regards the future again, what the figures suggest clearly is a possible rivalry between Russia and Germany, and the farther relative decline of Austria and France—the United Kingdom continuing to grow, but occupying from year to year a different place, as its interest in the so-called balance of power becomes less. Our change towards Europe is, however, affected in part by the growth of our relations beyond seas, which is another of the great facts of population, evident on the surface of the figures, that I shall afterwards have to notice.

Of course these changes have had the effect of raising questions of domestic, as well as of foreign, interest; and here again we are indebted to statistics mainly for the suggestion of the questions. One of these questions is, in the case of France, what are the causes and probable consequences, socially and economically, as well as in its relations in respect of the balance of power to its neighbours, of the stationariness of the population? This is one of the most remarkable facts, both in itself and in comparison with the facts of other countries, which population statistics disclose. The present would not be the place to discuss the answer to the questions raised, or the solution of the problems involved. All I am concerned to point out is that it is to the common figures of statistics, such as did not exist until the present century, that we owe the putting of the questions for answer. But for them it would not have been quite certain whether the population of France was stationary or not. Now the facts are exactly known and even familiar, and discussion goes on. Another question presented is as to the increase of population in countries like Germany and Russia, and the rapid encroachment there has been on the unused agricultural resources of those countries. As the stationariness of the population in France, however beneficial in some social aspects, is not an unmixed good, because it weakens France in its external political relations, so the increase of population in Germany and Russia, while they still remain mainly agricultural, appears to be attended by some mischiefs. The social condition of the rural population of Germany leaves much to be desired, as we may see from the extensive emigration, and from the difficulty of increasing the national

revenue. In Russia again the threatened difficulties appear most formidable. Until lately Russia has been largely in the condition of a new country, with vast quantities of land over which a growing agricultural population could spread. Now the European area is more or less filled up, and unless the vast territory of Siberia can be largely utilised for settlement, which appears doubtful, the pressure of population on the means of subsistence in Russia may soon become very great. The soil may be capable of supporting with better agriculture a larger population: but this is not the point. The kind of agriculture possible in any country is related to the existing capacity of the population, or to such improvements in that capacity as are in progress, and with the Russian population as it is there are certainly traces in Russia of an increasing severity in the struggle for existence, which may at any moment become most serious. The change in the conditions of expansion for the population internally as compared with what they were fifty years ago ought at any rate to be recognised at the present day, suggested as they are by the most obvious statistics of Russian population. Italy, it may also be noticed, is fast increasing its population without any increase of new soil or corresponding increase of manufactures.

Last of all, another fact presented by these obvious figures is the dependence of the population of the United Kingdom very largely, and to a less degree of France, Germany, Belgium, and Holland, on the importations of food from abroad. The facts as to the United Kingdom have been much discussed in all their bearings lately, Mr. Bourne, as we know well, having taken a large part in the discussions; but you have only to turn to the pages of the "Statistical "Abstract for Foreign Countries," to perceive that the United Kingdom is not quite isolated in the matter. It is much more dependent in degree than any other European country; but in the fact of dependence it is not altogether singular. The fact is of course partly due to the increase of population in far greater ratio than the increase of agricultural production, the prediction of Malthus, that the population of England would not be supported on the soil of England if it increased at anything like the rate in his time, having thus been verified, though not exactly as he anticipated; but it is also partly due, however, to an increase in the consuming power of the same population, and the larger consumption of more expensive kinds of food, requiring larger proportionate areas to produce them. France, with a stationary population, increases its imports of food, and the increased consumption per head among our own population of the quantity of such articles as sugar and tea also suggests that articles of home agricultural production are now consumed more largely than they were twenty years ago or more by the same

numbers. To these two causes combined then, the increase of population and increase of consuming power per head, coupled with a comparatively stationary agriculture, Europe owes the unique phenomenon of large masses of population supported by imports from foreign and distant countries. The social and political consequences of this new fact must be manifold, and again it is to the common figures of statistics we owe our knowledge of it. This great and striking fact would hardly be known at all if the system of periodic censuses and the system of recording imports and exports had not previously been introduced. Socially and politically perhaps the phenomenon is not yet sufficiently appreciated, and as compared with what it will be, it is probably only beginning to be important, but it is one which must before long play an important part in international politics and in the economic life of nations. Both the countries which grow the surplus food and the countries which receive it are profoundly concerned.

In another way the internal growth of population in different countries of Europe is also connected with great political changes. In Germany, for instance, it was partly the special growth of the population under the Prussian monarchy which assisted to make United Germany. In Russia, again, the great growth of population outside Poland has, from year to year, and decade to decade, dwarfed the Polish difficulty as a bare question of the balance of power in Russia. But we have even a more striking case of political change from the internal changes of population nearer home. Every one must have been struck, during the last few years, by the calmness of the country generally in presence of Irish agitation, and the evident hopelessness of any insurrection arising out of that agitation. When Mr. Parnell and other Irish Members were arrested in October last year, and the Land League suppressed, there was hardly even a fractional fall in consols. Forty, fifty, eighty years ago, things were entirely different, the Irish difficulty being incessantly spoken of as most menacing, which indeed it was. The present calmness and the former apprehension are obviously due very much to a mere change in population numbers. Ireland, at the beginning of the century, held about one-third of the population of the United Kingdom; as late as 1840 it still held very nearly one-third; now its population is only one-seventh. Apart from all relative changes in the wealth of the populations, these changes in numbers make a vast difference in the Irish difficulty. It becomes easier for us on the one hand to bear the idea of an alien State like Ireland in our close neighbourhood, wholly independent, or possessing Home Rule like the Isle of Man or the Channel Islands: the power of mischief of such a

community is less to be feared by a State of England's greatness than was the power of a separate Ireland fifty or eighty years ago, by the England of that time. A separate Ireland then might have been used by France against the very existence of the English Empire and the independence of England itself. Now this would hardly be possible either to France or to any other State. On the other hand any possible insurrection in Ireland is as nothing to the power of the United Kingdom compared with what it would have been when Ireland held a third of the whole population. Hence the calmness of recent years in comparison with the agitation of a former period, and which is all the more remarkable because the agitated memories survive and colour a good deal of the thought about the Irish difficulty still. A still more careful examination would show, I think, that the difficulty has diminished in intensity —that it is the alien part of Ireland which has most diminished in numbers, while the loyal part—Ulster—has relatively increased; but here again I wish to confine myself to patent and obvious figures, the lesson of which has more or less sunk into the popular mind.

It is not difficult to perceive, moreover, that these changes in figures must gradually tell more effectively than they have yet done on the Irish difficulty. In 1832 Ireland was endowed with one hundred and five members, its proportion of the population of the United Kingdom being then one-third. If one-third was then considered to entitle it to one hundred and five members, one-seventh, it is clear, would only give it at the present day about forty-five. Of these forty-five again one-third would be from Ulster, and almost exclusively among the remaining two-thirds, or thirty in all, if we are to judge from the present appearance, should we find Home Rulers. The parliamentary Home Rule difficulty would thus seem to have largely arisen from the failure to adapt the representation of the country to changes in the population. There is certainly nothing in the increased wealth or vigour of the Irish population compared with that of the rest of the United Kingdom, to suggest that Ireland should have a larger representation in proportion to its population than it had in 1832; yet if its representation were only to be reduced in proportion, the parliamentary difficulty would largely disappear. Even if no greater change were now to be made than the introduction of equal electoral districts, and assuming that the present changes in population continue, and that Irish representation is adapted to the probable relative population of Ireland and the United Kingdom at the next census, then the representatives of Ireland in Parliament would be reduced from one hundred and five to eighty-three, and of these eighty-three only fifty-five would be sent from those parts of Ireland in which there is disaffection, so that the maximum number of

Home Rulers, unless there are great changes of party, which I am not discussing, would apparently be less than fifty-five. Of course I am not discussing the possibility or expediency of any political changes. I am merely pointing out the ideas which the figures on the surface are suggesting for consideration, and which must affect the politics of the next few years. Here again it is the common figures of statistics—those derived from the systematic record of facts commenced within the last century, and only brought to a condition of tolerable advancement within the last fifty years, which are so fertile and suggestive.

Still continuing the use of the most common statistics of population, I propose next to direct attention to one of the most formidable problems which have to be dealt with by our imperial government, and for the knowledge of which we are mainly indebted to statistics. I refer to the growth of the population of our great dependency—India. I have already referred in the most general terms to the peculiar and complicated relations which are likely to grow up between nations of the European family and the races or nations of different types. At no point are these relations more interesting than they are in connection with the supremacy the English race has gained over the subject races of India. The point of interest in these relations for our present purpose lies however chiefly in this—that the Roman peace we have established in India appears to be effective in removing many obstacles to the growth of population which formerly existed—what Malthus described as the natural checks—so that under our rule the Indian population is growing in numbers from year to year, and trenching with alarming rapidity on the means of subsistence. I believe I am within the mark in saying that there is no more anxious subject for the consideration of our public men. The late Mr. Bagehot I know was profoundly impressed by the fact, and repeatedly wrote his impressions, though I do not remember whether anything he wrote is collected among his published writings. Others of our leading public men and economists are also deeply impressed by the fact, though it is considered almost too delicate for public discussion. There can be no doubt, however, of the formidable nature of the problem. India has now on its 1,400,000 square miles of territory a population of 240 millions—I am dealing in round figures—or about 170 to the square mile: not an excessive proportion according to formal comparisons with other countries, but in reality leaving the people no margin. It appears, from the most careful studies, that whatever the number of people to the square mile, there is very little new and fertile soil to appropriate; that much soil has been so appropriated during the last century of our rule; and that the

population continues to grow fast without any increase of the land revenue, or any other sign that land is being rapidly taken into cultivation—with signs on the contrary of exhaustion in the agriculture, and of an approach to the limits of production according to the means at the disposal of the population. So much is more or less accurately known by statistics; and of the cardinal fact—the magnitude and increase of the population—it is statistics from which we learn everything. The broad figures are here not so clear as they might be, because improved methods in taking the censuses have from time to time revealed larger populations than could be accounted for by taking the totals of one previous census and adding the probable or possible increase of population meanwhile; but of the actual fact of increase between two census periods there is no doubt, while the rate of increase, if we are successful in coping with famines, proves to be nearly 1 per cent. per annum. In ten years, therefore, there will be 20 millions more people in India to feed; in twenty years upwards of 40 millions more; and the problem thus brought before the Indian Government is in what way and by what means so to develop the character of the people that their industry may become more efficient upon practically the same soil. Failing any speedy alteration in the character of the people, the prospect seems inevitably to be that in India from decade to decade larger and larger masses of the semi-pauperised or wholly pauperised, the landless classes as Sir James Caird calls them in the Famine Commission report, will grow up, requiring State subventions to feed them, and threatening all attempts to reform Indian finance, while raising social and political difficulties of the most dangerous kind. It seems certain, then, that India for many years to come, will be an increasingly dangerous problem for our statesmen to deal with—the more dangerous perhaps because any change in the character of the people, bringing with it increased energy of production and increased strength of character altogether, will also bring with it a rise in the scale of living, tending to make the masses discontented instead of submissive to their lot. Whatever course events may take, our rule in India must apparently for generations become a problem of increasing difficulty and complexity. The problem is analogous to what seems to lie before a government like that of Russia, with this difference, that the government is in Russia a native institution, whereas in India it is an alien nation governing a host of subject races.

I shall be told, perhaps, that if statistics suggest problems like this, they are only making us uncomfortable before the time: the evils apprehended are purely speculative. But in the case of India this cannot be said. The actual creation of a famine fund is a proof that the evil is imminent. The fund is created in order to

secure that large numbers of people are kept alive in times of famine, millions being in this way semi-pauperised. The prospect is that before long there may be millions to be kept alive in non-famine and famine years alike, people without land or means of living, and without the possibility of being employed as labourers. Thus the difference between the present condition of things and what seems imminent, unless, as I have stated, there is an unlooked for change in the character of the people, is one not of kind but of degree. The statistics only bring to light and set out an immediate difficulty. The solution at present devised of a famine fund by which millions of the Indian people are virtually pauperised is certainly not one to be contemplated with any satisfaction. It may be unavoidable, but from the point of view of civilisation and progress it is little more than a confession of the hopelessness of the difficulty.

The last broad fact I shall refer to as presented and made familiar to us by these statistics of population, is that of the growth of population in the United States—a subject, perhaps, of even greater interest than any I have yet referred to, and involved as it is in fact with one or two interesting questions already glanced at, viz., the existence and increase of large European populations which are supported by imports of food from new countries, and mainly from the United States. In this case I may have to make some use in passing, not merely of common and familiar figures, but of a few less generally known; but I shall use none except what are easily accessible, and in all cases the ideas to be presented will be those suggested by what is common and familiar.

The broad fact presented by the United States is that of the doubling of the population in periods of about twenty-five years. There is a little doubt about the exact population at the time of the War of Independence, and down to the first census at the beginning of the present century, but for the present purpose the figures we get are good enough:—

	In Mlns.
1780	3·0
'90	4·0
1800	5·3
'10	7·2
'20	9·6
'30	12·9
'40	17·1
'50	23·2
'60	31·4
'70	38·5
'80	50·1

In other words, the population of the United States has multi-

plied itself by sixteen in the course of the century—this being the result of its doubling itself every twenty-five years for that period. In another twenty-five years, at the same rate of increase, the population will be 100 millions, in fifty years 200 millions, in seventy-five years 400 millions, and at the end of a century 800 millions! Such is the first aspect of the broad fact presented to our consideration by the increase of population in the United States. The rate is such as to be fairly bewildering in its probable consequences. The phenomenon is also without a precedent in history. There has been no such increase of population anywhere on a similar scale, and above all no such increase of a highly civilised and richly fed population. The increase is not only unprecedented in mere numbers, but it is an increase of the most expensively living population that has ever been in the world. For the idea of such an increase we are indebted exclusively to statistics. The United States, among the other new ideas of old civilisations they have had the benefit of, have had the idea of a periodical census, which is even made a part of their constitution, and as the result we have before us, not only in a general way, but with some precision, so that discussion may have an assured basis, this phenomenon of an unprecedented increase of population which is perhaps the greatest political and economic fact of the age.

The fact has altered in the first place the whole idea of the balance of power of the European nations. A century ago the European nations in their political relations thought little but of each other. Now the idea of a new Europe on the other side of the Atlantic affects every speculation, however much the new people keep themselves aloof from European politics. The horizon has been enlarged, as it were, and the mere fact of the United States dwarfs and, I think, restrains the rivalries at home. European Governments can no longer have the notion that they are playing the first part on the stage of the world's political history. And this sense of being dwarfed will probably increase in time. In this country, at any rate, we cannot but feel greatly attracted by the United States. Because of the magnitude of that country, the European continent is less to us—our relations are elsewhere.

It is in connection, however, with our own home problems of population that the increase of the United States is most interesting to us. The increase is partly at our expense, and at that of the other European nations. If the United States or some other new country had not received our emigrants, it is quite clear that our whole history would have been different from what it is. We should either have had in our midst the people who emigrated, and their descendants, straining the resources of our soil and mines and

capital, or the pressure upon these resources would have checked in various ways the growth of the population itself, so that probably at this moment, but for the new countries, more people would now be living in the United Kingdom than there are, and larger numbers of the population would be paupers, or on the verge of pauperism. The actual numbers we have lost altogether, and specially to the United States, have been :—

	To United States.	Altogether.
Before 1820	50,000	123,000
1820–30	100,000	247,000
'30–40	308,000	703,000
'40–50	1,094,000	1,684,000
'51–52*.....	511,000	704,000
'53–60	805,000	1,312,000
'60–70	1,132,000	1,571,000
'70–80	1,087,000	1,678,000
Total	5,087,000	8,022,000

Some correction of these figures would be necessary in the earlier years for foreigners included, and in the later years for persons returning home, but the correction in the present view would make no material difference. If these people had not emigrated, and had increased as the rest of the population has done at home, the existing population in the United Kingdom would now be many millions more than it is. The difference made by the emigration to the United States alone must be a good many millions.

The influence of the United States and other new countries has been greater still. On a rough calculation about 12 millions at least of the people of the United Kingdom live on imported food, and a certain part of the populations of Germany, France, Belgium, and Holland also live on imported food—the importations being mainly from the United States. These new countries therefore not only have permitted an increase of population in a century, till it is sixteen times the population at starting, but a much larger increase. To take the United States alone, we cannot estimate its contribution to the support of foreign populations at less than an amount equal to the support of a population of 10 millions, similar in character to that of the United Kingdom. Its exports of bread-stuffs and provisions are now about 90 million pounds annually, at the value as they leave the United States; and at 9*l.* per head, corresponding approximately to a value in the United Kingdom of 11*l.* per head, which is about our consumption

* Previous to this date the figures include foreigners.

of agricultural products per head, this would be equal to the support of 10 million persons. In other words then, the United States, from supporting 3 millions of people a century ago, are now supporting at least 60 millions—virtually an increase of twenty times the original number. The growth of population thus becomes more astonishing than ever. Altogether there must be about 15 millions of people in Europe supported by the produce of the new countries; and adding together the populations of Canada, Australia, and the United States to this 15 millions, less a deduction for the population in these countries a century ago, there remains a total of about 70 millions of European population,* or nearly one-fourth of the population now living in Europe, which is supported by the produce of newly opened regions. The history of Europe we may well say would have been entirely different from what it has been during the last century but for the new countries. It is difficult indeed to over-estimate the extent to which the existence of a new field for population, such as the United States presents, has dominated the recent economic history of Europe. We are so accustomed to a set of economic circumstances in which population, constantly increasing in numbers, and in the capacity for food consumption per head, finds practically unlimited means of expansion, that we can hardly understand economists like Malthus who were oppressed by the only too evident limits which nature, at the time he wrote, had apparently set.

It seems impossible, however, not to see that a period in which the pressure of limits to growth and expansion may again be felt is not far off. The approach of such a period seems to me to be suggested by the figures which are on the surface, and I may perhaps be permitted to anticipate that the idea of such an approach, if it is not now, will soon become a familiar subject for speculation.

The very language in which reference has been made to the increase of population in the United States itself, viz., that the present rate of increase implies twenty-five years hence a population of 100 millions, a hundred years hence a population of 800 millions, indicates that a continuance of this rate of increase may be considered incredible. It implies future changes in the industrial power of the race which we have no warrant to anticipate. The area of the United States, exclusive of Alaska, which does not

* To make these figures quite exact, a correction ought to be made on account of the non-European element in the population of the United States, the coloured population in 1880 being about 6½ millions. The coloured population in the United States, however, is brought into competition with the European, and in some degree Europeanized. It seems unnecessary, therefore, for our present purpose to make any correction.

count, is 3 million square miles, and of this area there are at least 1 million square miles, if not more, which are sterile or rainless, so that cultivation, so far as we can now foresee, is out of the question. There remain then 2 million square miles, and on this area a population of 800 millions would give 400 to the square mile—one-third as much again as the present population per square mile in the United Kingdom, twice as much per square mile as the population of the United Kingdom which is supported by the home agriculture, and more than twice as much per square mile as the present population of France. Allowing for the greater consuming power of people in the United States as compared with that of the French people, this is as much as to say that a rate of increase of population like what has been going on in the United States for a century is impossible in the next century, unless the power of the human race to extract food from the soil is enormously increased. No doubt the United States may lose in each decade that special force of addition to its rate of increase due to immigration. As its own population increases, the proportion of the area from which immigrants are drawn will diminish, and hence there is apparent reason to anticipate that the proportion of the immigration itself will diminish; but at present there is hardly a sign of change in the proportion of the immigration, and for some time to come at least no material difference seems likely from this cause in the rate of increase of the United States population. The increase of population between 1870 and 1880 was almost at as great a rate as any that has occurred. Besides, it does not follow that the diminution of the area from which immigrants are drawn should diminish the immigration itself. Other things being equal, a larger and larger share of the increasing population of older countries will emigrate, and if they do not emigrate they will have to be supported by the import of food from new countries, which comes to the same thing. Moreover, a much smaller increase in the United States than we have supposed, say to 400 millions only in a century, would presuppose practically so violent a change in existing economic conditions, that the difference between it and the more violent change which an increase of population to the larger figure would require need not be considered.

The bare statement of such figures appears to me quite enough to indicate that the present economic circumstances of the European family of nations, including the United States as an offshoot and part of the family, are not likely to continue for more than a generation or two. We are within measurable distance of very great changes. No doubt there are other new lands—in Australia, in Canada, at the Cape, and elsewhere—which will be more or less available in the future; but, singly, the United States is so much

the larger field, that the influence of these other new lands need not be considered. Assuming the United States to possess only half the area of new country available for the European races, a single doubling of the population, after the United States has been filled up—the work of a generation or two—would absorb all these other new lands; their existence only postpones the date when they will all be in the position calculated for America alone at the end of a century by thirty years or so. In the course of a century then we may affirm that the present economic circumstances of the European races which make possible an indefinite expansion of the numbers of the people, coupled with an increase of their consuming power, will have entirely changed.

The facts appear to me so interesting, that I ask leave to add something more, though the figures I have now to give you, while easily accessible, are not quite so much on the surface, and have not been popularised. These figures relate to the actual appropriation of land for settlement, and the actual growth of population in the new and old States respectively. What I wish to bring out is that a much larger portion of the available area of the United States has been "taken for settlement" than is commonly imagined; that in fact not only the thirteen original States and their three sub-sections have been so taken for settlement, but what are known as the Western States, exclusive of the Pacific territories, have also been taken for settlement; that the growth of rural population in this second group of States has now brought them nearly to the level of the rural population in the older States; that there is no longer much room for growth by taking up new lands in all these portions of the States; that the remaining available area is so small as to render inevitable its being taken for settlement before very long; and that from this point, probably within twenty or thirty years, the new economic circumstances I have been referring to must begin to make themselves felt.

The total area of the United States, according to the last census, exclusive of Alaska, is given as 3,025,600 square miles, of which there is a land surface of 2,970,000 square miles. Of this the portion belonging to each of the three groups named, with the quantities of each respectively taken for settlement, is as follows, the figures being worked out from the data of area and population as given by the last census:—

Area of United States and Area taken for Settlement, in Three Groups.

	Total Area.	Area taken for Settlement.
GROUP I.	Square miles.	Square miles.
Thirteen to sixteen original States	393,000	362,000
GROUP II.		
Twelve Western and Southern States*	605,000	560,000
GROUP III.		
Remaining States and Territories—		
a. Six Far West States†	620,000	370,000
b. Pacific States and territories‡.....	1,407,000	277,000
Total	2,027,000	647,000
Grand total.....	3,025,000	1,569,000

* Viz., Kentucky, Tennessee, Ohio, Indiana, Illinois, Michigan, Missouri, Arkansas, Louisiana, Mississippi, Alabama, and Florida.

† Viz., Iowa, Wisconsin, Minnesota, Kansas, Nebraska, and Texas.

‡ Viz., California, Oregon, Dakota, Colorado, Nevada, Arizona, Idaho, Montana, Wyoming, Utah, New Mexico, Washington.

Thus out of the total area of 3 million odd square miles, rather more than one-half is the area taken for settlement; and the area not for settlement is almost exclusively in the last group of all. This group I have subdivided in two sections, the first comprising States like Iowa and Minnesota, more or less completely settled, and the second comprising the Pacific States and Territories; and of the first subsection it will be observed more than half is already included in the area taken for settlement. The question then arises —How much of the unsettled portion is available for settlement? and to this the answer must be, little. When I mention that Mr. Porter, the well known American statistician, and one of the Tariff Commission now sitting, in his book on "The West," estimates that there are 1,400,000 square miles of territory in the west, of which only a tithe will ever be available for cultivation, it will be seen that the wholly unoccupied portion of the available territory must now be reduced to very small dimensions.

The next point to which I wish to draw attention is the actual population of the first two groups, exclusive of the town population, and the proportion to the square mile. This figure I work out from the tables at pp. 26—31 of the Introduction to the Population Statistics of the United States Census:—

Net Rural Population of the United States, exclusive of the Town Population, in different Groups of States, with the Numbers per Square Mile.

	Total Population.	Town Population.	Net Rural Population.	Number per Square Mile of Rural Population.
Group I	21,835,111	7,939,334	13,895,777	35
„ II	19,656,666	3,614,835	16,041,831	26½
„ III*a*.....	6,761,132	847,282	5,913,850	9½
„ III*b*.....	1,902,874	534,659	1,368,215	1
Total of III.....	8,664,006	1,381,941	7,282,065	—
Grand total	50,155,783	12,936,110	37,219,673	12

Thus while the rural population in the thirteen original States is 35 per square mile, it amounts to no less than 26½ per square mile in twelve other States which we are accustomed to speak of as more or less unoccupied. This is clearly not the case. An addition of 8½ per square mile, or of little more than 5 millions in all, would make them as populous as the rural parts of the original States. Group III*a*, though it has a larger area to fill up, would nevertheless become as populous per square mile rurally as the older group of States by an addition of about 15 millions of population. It appears, however, that a large part of this area belongs to the rainless region; so that probably less than two-thirds of this 15 millions would fill up the available area to the limit of the thirteen original States. There remains only the last division of all; but it would seem that the available area here cannot be put at more than 400,000 square miles, on which the present rural population would be about 3 per square mile; so that if the population grows to the limit of the older States, the addition to the population necessary would be about 10 to 12 millions only. Altogether, an addition of about 20 to 25 millions to the rural population of the United States,* would seem all that is required to occupy the available area in the same way that the oldest and most settled part is now occupied. When that point is reached, the present conditions of expansion must begin to change.

How long will it be till the point is reached? Some idea of this may be formed from a comparison of the increase of the total population with the increase of the city population. This is shown in a table at p. 29 of the Introduction to the Population Statistics of the Census, already referred to, from which it appears that the total population increased nearly 12 millions in the last census period,

* Viz., 5 millions to second group, 10 millions to Group III*a*, and 10 millions to Group III*b*.

and the urban population nearly $3\frac{1}{2}$ millions, so that the rural population increased $8\frac{1}{2}$ millions.* Of course it may be urged that the rural population may have increased in the older parts of the country as well as the new, but it is interesting to observe how much of the absolute increase of population is in the second and third groups, and not in the first. This is shown in the subjoined table, extracted from the "Introduction to the United States Census:"—

Population and Number of Inhabitants per Square Mile in each of Three Groups in the United States at the Date of each Census.†

Date.	First Group.		Second Group.		Third Group.	
	Population.	Average Density (Persons to a Square Mile).	Population.	Average Density (Persons to a Square Mile).	Population.	Average Density (Persons to a Square Mile).
1790....	3,819,846	17·0	109,368	7·2	—	—
1800....	4,922,070	18·5	386,413	9·8	—	—
'10....	6,161,566	20·6	1,078,315	9·8	—	—
'20....	7,417,432	23·8	2,216,390	11·3	—	—
'30....	9,158,721	26·3	3,707,299	13·1	—	—
'40....	10,638,004	30·1	6,357,392	14·5	74,057	4·7
'50....	13,218,496	36·7	9,078,288	18·4	895,092	7·1
'60....	15,818,547	43·8	12,637,882	24·3	2,986,892	9·5
'70...	17,964,592	50·1	15,594,721	29·5	4,999,058	12·9
'80....	21,835,111	60·3	19,656,666	35·1	8,664,006	13·4

Thus in the last decade about 4 millions of the total increase of population is in the second group, and 3,700,000 in the last group. At this rate, clearly the increase of population in the second group in ten years from 1880, if all agricultural, would be such as

* The following is a copy of the table, the urban population here accounted for however being somewhat less than above stated, which includes towns of a smaller size than are reckoned in this comparative table:—

Number of Total Population of United States at each Census, and Number of Urban Population, with the Proportion of the Urban to the Total.

Date.	Population of United States.	Population of Cities.	Inhabitants of Cities to each Hundred of Total Population.
1790	3,929,214	131,472	3·3
1800	5,308,483	210,873	3·9
'10	7,239,881	356,920	4·9
'20	9,633,822	475,135	4·9
'30	12,866,020	864,509	6·7
'40	17,069,453	1,453,994	8·5
'50	23,191,876	2,897,586	12·5
'60	31,443,321	5,072,256	16·1
'70	38,558,371	8,071,875	20·7
'80	50,155,783	11,318,547	22·5

† To prevent misunderstanding, it should be noted that the figures per square mile in this table refer to the whole population, whereas in the table on p. 540, the figures relate to the rural population only.

nearly to fill up the country with a rural population to the level of the older States, while the same increase would go a very long way towards filling up the last group in the same way. But the speed with which the vacuum will be filled will probably be even greater. The population in the new regions grows at an increasing rate as regards amounts. In 1840 the population in the third group was about 74,000 only; in 1850 it had increased by rather more than 800,000; by 1868 there had been a further increase of 2 millions; by 1870 there had been another addition of 2 millions; and between 1870 and 1880 there is an addition of nearly 4 millions. Thus only in one decennial period, viz., between 1860 and 1870, is the increase less than about double what it had been in the previous decennial period. The increase of population in this new region at the past rate would therefore be, not 4 millions, but 8 millions, or about half what is required to fill up the region with a rural population to the level of the thirteen original States. By 1890, therefore, not only will the second group of States very probably be filled up to the level of the thirteen original States, but the work of filling up the last group of all will have advanced very nearly towards completion. In another ten years, that is by 1900, assuming the same progressive rate of increase, the addition to the population in the last group of all would be 16 millions, which would be far more than sufficient to fill up the vacuum.

There is still another way of looking at the matter. During the decennial period 1870-80, the increase of population in the United States was about equally distributed between the three groups—about 4 millions to each, the increase in the first group being, however, mainly in the cities. Assuming an equal division of the 50 millions additional population which will be on the territory of the United States in twenty-five years—and it is more likely that the Western States will have a larger proportionate share—this would give 16 millions more to the second group, or 11 millions more than is necessary to fill up the rural districts to the level of the Eastern States, and 16 millions to the third group, which would suffice to fill the rural districts to the Eastern level. Even looking at the matter in this way then, the prospect is that the available area in the United States will be peopled up to the level of the thirteen original States, as regards the rural population, in the course of twenty-five years. But the distribution of the increase between the groups, as I have said, is likely to be unequal, and the West will probably be filled up with even greater rapidity. To look at the matter in yet another aspect: of the 50 millions additional population, assuming an increase of the town population like what has been going on in the past, about 12 millions will be a town population, leaving 38 millions as the rural increase. But unless rural population is to increase in the original

States, and is also to increase in the second group to more than the present level of the original States, the whole of this 38 millions, except the 5 millions required for the growth of rural population in the second group to the level of the original States, will be left for the occupation of the available area in the third group, or double what is required. Whatever way we look at the matter then, it seems certain that in twenty-five years' time, and probably before that date, the limitation of area in the United States will be felt. There will be no longer vast tracts of virgin land for the settler. The whole available area will be peopled agriculturally, as the Eastern States are now peopled.*

All this must involve a great change in the conditions of the growth of population and the general economic conditions of the country. It confirms in the most ample manner what was to be surmised from the bare statement of the geometric increase of population itself, pointing as it did to a population of 800 millions at the end of a century from this time. Long before that it is plain, and I think quite certainly within twenty-five years, the conditions of the expansion of population must be substantially different from what they are now.

It will be urged that it is notorious the United States can support enormous masses of population. Its available agricultural area in round figures is twelve or thirteen times that of the United Kingdom, and eight times that of France. Considering what the population of the United Kingdom or that of France is, and the superior fertility of many tracts of the United States, it appears safe enough to assume that the United States can support an indefinite increase of population, and that there is room for great expansion of population within the settled area. But assuming all this to be the case, what we may observe is that it is not quite to the present point. This is not a question of supporting a large population anyhow; *how* they are to be supported is here all important. The moment there is little new land to occupy, the conditions of expansion must change; every year must bring nearer the date when the fruits of the soil will be extracted with increasing difficulty. The agriculture must become different from what it is now. What has been already said, moreover, as to the United Kingdom and France not supporting all

* These various calculations may be put more shortly still. Assuming the available area for settlement to be altogether 2 million square miles—and it seems not quite so much—this would absorb altogether, at 35 per square mile, a rural population of 70 millions. With that number the entire available area of the United States would have as thickly settled a rural population as the thirteen original States now have. But the present rural population being over 37 millions, only 33 millions more at the outside are needed to fill up the available area to the level of the Eastern States, or less than the estimated addition to the rural population at the present rate of increase in the next twenty-five years.

their own population, and as to what the position in the United States would be, even as compared with the United Kingdom and France, if the geometric increase in the United States should continue no more than a century, may show that there is, after all, no room for an indefinite expansion of population within the settled area in the United States. I should like to go farther, and suggest that the limits of such expansion, without a very great and almost inconceivable change in the agriculture itself, must be very narrow. Comparisons with European States on this head seem very apt to mislead. But the figure of 35 per square mile as the rural population of the older parts of the United States is, after all, one-fourth of the agricultural population of France per square mile; and there are two important differences between the agriculture of France and the United States:—1. The consuming power of the United States population is much greater, perhaps double that of the French population, so that the soil cannot be expected to support the same number of Americans as French. 2. The western farmer in the United States grows for export, not merely to the towns of the country, but abroad. A rural population one-fourth that of France may thus be quite sufficient to settle up the country. We must not come to the subject with European ideas as to the scale of living.

It would be foreign to my purpose to indulge in speculation as to what will be the consequences of this approach to a complete settlement of the United States, coupled with the fact that population, whether in the United Kingdom, or in Germany, or in the United States, shows no signs of abatement in the rate of increase. It is sufficient for my purpose to point out that as the existence of vast tracts of virgin soil in the United States has permitted, during the last hundred years, an expansion of the European population without a precedent in history, has made the economic history of Europe in that period entirely different from what it would otherwise have been, so now the approach to a complete settlement must profoundly affect the world. The conditions of economic growth will be fundamentally altered. Possibly there may be chemical or other inventions rendering possible great improvements in agriculture, which will have practically the same effect as an increase of the quantity of new land available. Possibly we may have the rate of growth of population itself checked. But with the change of one condition others must change, if the masses of European people are to remain at their present level of prosperity. If there is no change, the nature of the difficulties that will arise is obvious: the masses of labourers will have to contend under increasing difficulties* against a fall in the scale of living.

* See "Some Leading Principles of Political Economy Newly Expounded." By J. E. Cairnes, M.A. Macmillan and Co., 1874, pp. 332—4.

But while I refrain from indulging in general speculation, I may, perhaps, be allowed to point out some of the more immediate consequences which are likely to follow from an approach to complete settlement in the United States, of which we seem to be within a measurable distance. First of all there will probably be a diversion of a larger part of the stream of emigration from Europe and the eastern States of the American Union to the north-west provinces of Canada. Here there are probably about 400,000 square miles of territory available for settlement, equal in quality to the best land in the United States West. As there is no such field in the United States itself, the stream must apparently be to the new land. The second immediate consequence I should look for would be an increase of manufactures and of town population in the United States. The agricultural outlet becoming less tempting, and agricultural wages tending to fall, the population will inevitably be more and more largely drawn into manufacturing. And a third consequence will probably be a check to the tide of emigration from older countries, a greater demand upon the agriculture of those countries, or at least a mitigation of the extreme competition it now sustains from virgin soils, and possibly a reversal of the present tendency for rents to fall. Such changes may hardly be apparent for a few years, with the exception, perhaps, of the diversion of the stream of emigration to the north-west of Canada, which has begun; but it seems hardly possible to doubt that they must begin to be felt before very long—perhaps in the course of ten, and almost certainly in the course of twenty years.

To sum up this long review. These easy figures of population evidently go to the heart of much of our politics and political economy. To quote only the illustrations I have given, we may say, first, they give some idea of the mass of the European populations in the world, and consequently of the overwhelming strength of European civilisation. Next, as we have seen, they help to explain the existence of five leading Powers in Europe, and the changes in the balance of power which have occurred in the last fifty or sixty years. They equally help to explain domestic changes in each country, such as the diminished intensity of the Irish difficulty in the United Kingdom, or the growth of social difficulties in a country like Russia, through the population increasing with no other opening but a restricted agriculture; or such external difficulties as we have brought on ourselves by the conquest of India, and the Roman peace we have established. Finally, they set before us in a clear light the great economic phenomenon of our time, the creation of the United States of America, and the provision by this and similar agencies for a growth of population, not only in the

United States, but in Europe, which is entirely without precedent. I have endeavoured to supplement the last figures with a few others designed to throw light on the question of the continuance of this portentous growth, and the probability of a check to it; but the figures here used are also easily accessible. I trust you will agree with me that we may conclude from all this review, that the easy figures of statistics which we are all more or less familiar with are fruitful. How impossible it would be even to conceive some of the problems which are now raised for discussion if there were no statistics, and how inexplicable many of the facts of the present day and of history would become if statistics did not explain them.

If time permitted, it would not be difficult to show how other familiar figures in statistics also supply problems for discussion, and colour all our political thought. Let me only add, however, that the fact of these easy figures being so useful, should encourage the development of the study of statistics. Familiar as are some of the things we have been discussing, it is often too evident that they are not sufficiently appreciated—that hazy ideas are widely held which a clear knowledge of statistics would disperse. Still more, not only should the accessible and easy figures be more studied, but it is most desirable to digest other masses of figures and increase the field of what can be readily understood. The difficulties in the way in some branches, as in the case of many trade figures, the figures of national income, and the like, are enormous, in consequence of the varying aspects of the data and the difficulty of impressing on the public mind some of the most elementary conceptions of the statistician, such as the propriety of using figures of trade on an imperfect basis to show progress or the reverse for a series of years, because the basis, though imperfect, is throughout the same. There is no doubt, however, that with time and attention order can be educed of what is now chaotic to the public mind, and many facts of some complexity brought to the general knowledge. We have likewise to remember that time is working with us. The influence of simple population statistics upon political thought, and in suggesting ideas which colour literature and philosophy, which has been our theme to-night, is the result of a systematic collection of statistics, which commenced only eighty years ago, and which is still extremely deficient. We may reasonably hope for more light from statistics as time passes by, and as it becomes possible to draw out comparisons over longer periods. The statisticians of the present day labour for the future, and we need not be discouraged if in many departments we have yet to wait for results.

Proceedings *on the* 21*st* November, 1882.

Sir Rawson W. Rawson, C.B., K.C.M.G., said he would not abuse the patience of the meeting by entering at that late hour into any lengthy remarks on the paper they had heard, though its importance or its interest could scarcely be exaggerated. It would be impossible to speak too highly of the importance of the facts brought before them, either as regards the United States as the greatest food producing part of the world, or India as part of our own empire, which was shown to be advancing into a condition which must excite our greatest interest and attention, in order to guard it against a recurrence of famines. There was only one thing which he would add to what had been said by the president with regard to the population of the United States, and that was a matter which had come under his observation, namely, that the physical condition of the eastern and western States of America was changing—that the larger and stronger elements of the eastern States were migrating westward, and there was now a marked difference between the physical condition of the western and of the eastern States. The mean stature of the population of the old eastern States was now some two or three inches less than that of the great men of Kentucky, Missouri, and the western States. This circumstance would probably affect the future of the United States, and might well be considered in connection with the speculations of the president. He would not say more, but he was sure they would all unite in thanking the president for his most valuable and interesting communication.

Professor Leone Levi said he had the privilege of seconding the vote of thanks to the president. He did not know that it was customary to thank the president for his opening address, but it was really a pleasure to do so on this occasion. He could scarcely say which he admired the most, the extensiveness of views, the depth of reasoning, or the vista into the future which the president had laid before them. The problems suggested were numerous and exceedingly important. They were of a political, economical, and social character. The address exhibited the mutual dependence of the various States of Europe between themselves and collectively on America, and of America on Europe. It was notable that a vast building had been framed on certain solid materials, such as the area of the different States, which was absolutely ascertained, the population—an element equally fixed or ascertained by actual counting—and the productiveness of the people. Much had been done, therefore, to raise these common standards into visibility, solidity, and value. We were apt to deal with these facts as if they only stated some few isolated circumstances, and we did not realise their direct and indirect bearing and their mutual bearing on one another. This it was which the address had brought before the

Society in a remarkable manner. Political events had been touched upon incidentally of great interest, such as the contact of Germany and France, and, withal, the question which would be the greatest in the future—the relative position of England and Ireland, and the position of India as a dependency of the empire. All these were political questions which required great acumen to fathom at such a distance of time as the president had brought before them. He joined most heartily in the vote of thanks to him for his most valuable paper, which had raised their estimate of the value of statistics, and shown how much might be done by a few facts reasoned upon and well considered in their present and future bearings on the world at large.

The resolution was put and carried unanimously, and acknowledged by the president.

The President then presented the Howard Medal of 1882 to Mr. D. Manson Fraser, M.A., M.D., of the Metropolitan Fever Hospital, Homerton.

The Hon. Secretary announced that Dr. W. A. Guy, F.R.S., had just issued a book on "The Claims of Science to Recognition " and Support," copies of which he had sent there for presentation to such of the Fellows as took an interest in the subject.

Mr. John Glover asked whether there was any hope of the Society getting a better room for meeting than the present. He hoped the Council would decide without further delay, if they could not get a better room for the general purposes of the Society, at all events, to arrange that the monthly meetings during the winter should be held in some more suitable place. There were plenty of rooms in London, both east and west, used for other purposes, which could be hired for their meetings.

The President said at present no steps were being taken, as far as he knew, towards any improvement in this respect. It was this view which Dr. Guy was desirous to ventilate in the book which had just been referred to; and if Mr. Glover, or any other member, could do anything to stir up the subject, he should be very glad to see it done. He really believed the want of a better place of meeting, though the premises they occupied were otherwise most suitable, was seriously obstructive to the progress of the Society, and that it might be worth while for the Council to consider whether they could not make some change.

Address *of the* President *of* Section F, "Economic Science *and* "Statistics" *of the* British Association, *at the* Fifty-Second Meeting, *held at* Southampton, *in August*, 1882.

By the Right Hon. G. Sclater-Booth, M.P., F.R.S.

On Local Government in Rural Districts.

In selecting Local Government in the Rural Districts for the subject of my address, I have no wish to transgress the rules of the Association, which eliminate controversial politics from the materials for our discussions; on the contrary, I am anxious to seize an opportunity which thus presents itself of securing for what is, or ought to be, a non-political question, the chance of being considered and examined in a non-political atmosphere.

There are also some circumstances and arrangements to be found in the local government of the county of Hampshire, commonly called the county of Southampton, which seem peculiarly worthy of notice by way of illustrating what is or may be the state of things under the existing law and practice.

Those who desire to enter into the question of local government historically, analytically, and comprehensively, will find it dealt with *ab ovo*, and in an exhaustive manner, by my friend the Warden of Merton College, Oxford, in an excellent essay published by the Cobden Club (in their volume for 1881). Such is not my intention. I wish rather to take it up on the assumption that the actual facts of the case are more or less familiarly known to my hearers, and to offer some observations, the result of my own knowledge and experience, which may direct attention to certain aspects, hitherto little regarded, of what is undoubtedly a difficult and important subject, but one as to which, perhaps, we shall find, on examination, that the difficulty and importance have been exaggerated, confused, and obscured by misleading conceptions and imperfect appreciation of its bearings.

Many people, and those not always the best acquainted by experience with the working of our local institutions, have committed themselves a little hastily to a condemnation of the chaotic condition and mischievous working of the existing system; and these are just the class of thinkers who, from the bias of their minds, are impatient of anything short of scientific rearrangement and completeness, the bureaucrats of a centralising government, or the fanatics of political philosophy. The urgent need of a "root and

"branch" change, again, has been exaggerated by the jealousies and rivalries of political partisans.

In singular contrast with these it is interesting and profitable to notice how little the local authorities who are engaged in the administration of the rates, or the ratepayers themselves, have responded to the attempts which have been made from time to time, and particularly of late years, to get political capital out of these questions. Common sense and practical knowledge teach them to mistrust platform oratory on such humdrum subjects, which attract little real interest amongst politicians; while they know from their own experience that many of the complaints (not all) are beside the mark, and instinctively feel that some of the remedies proposed may turn out worse for their interests than the evils complained of.

Ambiguous language in this, as in many other things, is the cause of a number of current fallacies. Local government means quite a different thing as applied to, firstly, rural; secondly, semi-rural; and thirdly, to urban communities; but this is forgotten in the eagerness for uniformity and simplicity of system. The genius, however, of the English people is not favourable to a highly scientific organisation like that of the French, who have much more of the form, with less of the reality, of local self-government than is to be found in this country; and even in France it required no less formidable an instrument than the great revolution to obliterate the old names and landmarks which had prevailed during the monarchy. The demand for municipal government in our counties, which is derived, perhaps, from the present French system, involves the fallacious assumption that the sort of administration which is needed for towns is required, or even possible, in rural districts.

If we find a thorough system of municipal government established for cities and towns, and provisions of law in constant and useful operation for the gradual introduction of the same into growing or inchoate urban communities (which is really the case), it may fairly be argued that the rural and scattered population of the counties, whatever may be needed in the way of improved representation on their governing bodies, do not really require, and are not, in fact, in a position to profit from such local government as is primarily adapted to the wants of towns and cities, and such as is within their reach as and when the want of them is experienced.

As population increases in compactness and wealth it begins, of course, to require municipal government for many purposes apart from the primary objects of police supervision and the maintenance of order. The householders in common council together find they can provide better and more cheaply through such means for their

common health and wealth, for the cleanliness and convenience of their dwellings, and for the luxuries which rapidly become the necessities of town life, such as water supply, lighting, and scavengering of streets, sewerage, building regulation, fire prevention, &c. These are objects which householders in rural districts must provide separately for themselves. Common to both are (1) police supervision, in so far as that service is borne or assisted by local taxation and management; (2) road repair, though of a less expensive sort in rural districts; and (3) above all, the poor law administration, which forms the real difficulty in harmonising local government for town and country, and which stands in the way of those who fancy it easy to reconcile conflicting or intermixed local government areas.

The poor law system, as we now know and have experience of it, was forced fifty years ago on the attention of parliament and the public by circumstances into which we need not enter. Under it the fifty-two counties of England and Wales, containing about 15,000 parishes, have been divided into about 650 unions. These were marked out and settled in a somewhat bureaucratic and centralising spirit, no doubt, but still with due regard to the essential object of convenient local administration, a convenience which could not be found in symmetry with county areas. County boundaries were, accordingly, disregarded to such an extent that fully one-third of the unions overlap the borders of two or even of three counties. The desired objects were, nevertheless, for the most part attained, and may be comprehensively stated under two heads:—first, the interests of the poor—the possible recipients of relief—as regards the accessibility of the workhouse; and secondly, the interests of the ratepayers as regards economical management and equitable grouping of parishes in proportion to their greater or less rateable value, and to their more or less pauperised condition.

To whatever criticism the mode in which these unions were laid out may be open in detail, and although there is ample legal power for their alteration and amendment, there can be no question but that they are so far stereotyped, as a great national settlement, that they do not admit of comprehensive resettlement: not because of any difficulty in drawing an area map of the kingdom on different lines or principles, or with more regard to county and other local boundaries; but because the local interests which have grown up during half a century, and which have been recognised by innumerable Acts of Parliament, are bound up with them, and are of far greater importance actually, and still more from the point of view of those locally interested, than any importance which can be quoted as attaching to the county, or to central government considerations.

Parliament has so far recognised this, and so far committed itself to the union as the administrative area of the future as contradistinguished from the county, that it has from time to time attached new functions to the guardians and new importance and value to the district within which they hold sway. Briefly, they are as follows:—1. Each union was composed originally of many parishes, which retained a certain amount of independent action, and in particular, the right and duty of the valuation of property and its assessment to the local rates. These functions were transferred to the guardians of the union by the Union Assessment Committee Acts. 2. Each parish was originally made responsible for the cost of its own pauperism; but, by the Union Chargeability Act, not only was the expense spread equally, or rather rateably, over the union, but the management and control of the board of guardians as a whole over the pauperism of the union became greatly more effective. 3. In process of time, as the need for sanitary legislation became recognised, each union was made a separate and complete administrative area for sanitary purposes, with officers and machinery for carrying out the Public Health Act (which wisely discriminates between the rural and urban districts as regards the stringency and character of its provisions). 4. Each union has been more recently constituted a centre of administration under the Education Act, and is charged with the important duty of enforcing compulsory attendance at elementary schools, and of paying school fees for the poor under certain circumstances. Here, again, it may be observed that parliament has specially provided for the rural districts a machinery different from that which is adapted to the populous places where the School Board system may more properly prevail. 5. Each union has functions assigned to it under the Registration Acts, and is charged with the important duty of enforcing primary vaccination over the whole kingdom. 6. Lastly, by the legislation of 1877-78, the entire management of the highways of the rural districts has been placed within the power of the guardians, and the areas of highway management may become identified with those of the poor law unions.

It may fairly, therefore, be laid down, that local government for the rural districts is actually or potentially provided by these means—that it is already too stereotyped to be shifted without such a wrench as would be of revolutionary severity, and too important, even if that were otherwise, to be subordinated or interfered with for any practical or theoretical objects which have as yet been assigned as a reason for the constitution of a system of county government.

County government has a very portentous sound, and the idea of it is plausible and attractive; but when it comes to be examined,

we find there is little meaning in it as at present exercised, much that is of doubtful expediency in the proposals for its extension, and no slight fallacy in the idea that it ought to be, or indeed can be, converted into a system of "municipalities for counties."

As to the facts, the counties appear, by the "Statistical "Abstract," to levy for county and police purposes about $1\frac{1}{2}$ million annually, of which total sum it is probable that the larger moiety is required for the latter and secondary object. It is, no doubt, an anomaly that this money should be levied and expended by persons who, though deeply interested in public economy, are not the elected representatives of the ratepayers. Meanwhile it may be noted that the sum of 9 or 10 millions, *i.e.*, six or seven times that amount which is required for poor law, sanitary, and highway purposes, is exclusively raised and administered by persons annually elected by and responsible to the ratepayers.

If, again, we further analyse the county expenditure, we find that as regards the police force, for which the larger amount is levied, the county authorities, like the town councils in boroughs, are only partners with the central government in respect of the pay and management, and are very much under the control of the Home Office for both.

Of the county rate proper, which may be taken in round numbers at about 750,000*l.*, it is probable that about one-half is required for the repayment of loans raised to meet capital expenditure which has been made obligatory by parliament under various statutes for the building and maintenance of prisons and lunatic asylums. Of the remainder, some is expended in discharge of duties imposed by statute in connection with coroners' inquests, and in the salaries of the coroners themselves. Heavy expense is likewise incurred under the Cattle Diseases Prevention Acts, the Sale of Food and Drugs Act, and many other statutes; so that the margin of debatable expenditure on salaries of county officers, and on the repair of buildings and county bridges, amounts to a comparatively insignificant sum in comparison with the enormous amounts which are directly dealt with by the agency of the board of guardians, a body thoroughly representative of ratepayers.

Those who desire to set up the county as an administrative machine for all purposes, and in relief of our overworked House of Commons, forget how little meaning the term and name of a county now has, except for political representation, and for the administration of justice. What measure, indeed, for county government reform could be devised which could provide machinery uniformly applicable over such widely different areas, in point of size and circumstances, as Devonshire and Rutland; or for Lancashire and the West Riding, spotted over with numberless municipalities and

local board districts, in common with Cambridgeshire or West Sussex, with their sparse population of small village communities? Further, the notion that county parliaments are, as county municipalities, to carry on public business, to vivify local life, and to relieve the overloaded shoulders of the House of Commons, is based on a triple fallacy. First, it is assumed that control exercised by such bodies over the subordinate areas of unions or highway districts and parishes, would be welcomed in exchange for the control of the central government; whereas they would probably be more unpopular, and certainly less effective. Secondly, it is forgotten that the requisite machinery for such an organisation and control could not be brought to bear without great cost and a multiplication of permanent county officers in continuous session at headquarters. And thirdly, it is impossible to believe that the public opinion of the country would ever deliberately suffer the parliamentary function to be discharged by sixty or seventy local centres, taking different, and probably conflicting views of duty and policy. It would indeed be Home Rule for counties, with all the evil omen attaching to that phrase. Every consideration of prudent statesmanship points to the conclusion that county government, if reformed and endowed with an infusion of the representative element, must be confined to the limited functions now exercised by the courts of quarter sessions, together with such new duties as it may be found possible to devise without interference with the real and, on the whole, satisfactory work of the guardians, waywardens, and sanitary authorities, which already are, to all intents and purposes, the municipalities of the rural districts.

How nearly the system thus sketched out *à priori* may be brought into actual working under the existing law and practice, can be illustrated very well and appropriately by the state of things which prevails at this moment in the county of Southampton.

The twenty-five poor law unions into which Hampshire was divided fifty years ago, have been, with the exception of three or four parishes, only one of which is of importance, brought within the county area. The magistrates with wise forethought identified, many years ago, their own magisterial divisions with those of the poor law unions; and more recently they established, under the Acts of 1862 and 1864, highway districts coterminous with the same administrative areas. Quite recently the guardians of several of these unions have taken on themselves, by a process permitted and encouraged under recent legislation, the office and duties of highway authorities. We thus have, in the county of Hants, twenty-five subordinate areas, completely exhaustive of the county map, the governing bodies of which are poor law guardians, sani-

tary authorities, valuers and assessors of real property, waywardens of the highways, supervisors of public vaccination and of elementary education; and they discharge these multifarious duties for the ratepayers, to annual election by whom they owe their existence, and in the general interests of the public, on whose behalf parliament has imposed them.

These representative governing bodies levy and expend for the purposes above-mentioned a sum of about 300,000*l.* annually, which is equal to a rate of about 2*s.* 3*d.* in the pound on a rateable value of about 2½ millions. The court of quarter sessions, on the other hand, levies annually about 35,000*l.* in the shape of county and police rates, in nearly equal moieties. In other words, the ratepayers control directly about 2*s.* 3*d.* in the pound, while the magistrates expend about 4*d.* under these two heads. But of the monies levied for the county, apart from the police, one-third goes to the payment of debt; so that the other items of expenditure, including a heavy contribution to the cost of the main roads, is covered by a rate of about 1¼*d.* in the pound. The ratepayers' grievance being thus exhibited in its true proportions, the problem for solution becomes difficult in proportion to its minuteness. On the one hand, it is undesirable to establish an electoral machinery more important and extensive than in proportion to the duties which have to be discharged; and, on the other hand, any attempt to add new obligations, or to establish a centralised county authority, having a status and jurisdiction paramount over the elective guardians, will be certain, as it becomes appreciated in all its bearings, to excite jealousy and alarm amongst those whose grievances it is presumably intended to redress.

If I may venture, in conclusion, to draw a moral, it would be by way of caution and advice to those who may be desirous of taking up this subject, to inform themselves exactly what alterations and improvements in our system of local areas and administration are permissible under the existing law, and then to inquire why they are so rarely effected. The fact is, that no such changes can be made without touching vested money interests according as the effect will be to increase or diminish the ratio of rateable value to pauperism; and this difficulty is aggravated where loans have been raised on the security of the rates. Besides this, the disturbance of local institutions such as must accompany departmental or legislative activity is always unpopular; and unpopularity in these days enormously facilitates the proceedings of the parliamentary obstructionist. The fate which has attended all the endeavours hitherto made to reform county government, bears melancholy testimony to the influence of that formidable personage.

It may be useful to give a few figures in particular illustration

of the sums devoted to different heads of expenditure in the county of Hampshire, as regards the union area and the county area respectively:—

Analysis of Expenditure in Poor Law Unions in the County of Southampton, in the Year ending Lady Day, 1880.

Total Relief to the Poor.	Payments for or towards the County, Borough Rate, or Police Rate.	Payments by Overseers to Highway Boards under 27 and 28 Vict., cap. 101, sec. 33.	Contributions by the Overseers to the Rural Sanitary Authority for General Expenses (if any).	Contributions by the Overseers to the School Board (if any).	School Attendance Committee Expenses (if any).
£	£	£	£	£	£
205,529	60,887	26,300	4,153	17,176	1,393

Payments on Account of the Registration Act, viz., Fees to Clergymen and Registrars, Outlay for Register Offices, Books and Forms.	Vaccination Fees.	Expenses Allowed in respect of Parliamentary or Municipal Registration; and Costs of Jury Lists.	Payments under Parochial Assessment Act and Union Assessment Committee Acts.	Money Expended for all other Purposes.	Medical Relief.	Total Expenditure.
£	£	£	£	£	£	£
2,053	1,956	1,576	889	15,433	10,430	335,347

Particulars of Expenditure out of the County Rate by the Court of Quarter Sessions for the County of Southampton, in the Year ending 31st March, 1881.

Pensions.	County Bridges.	Main Roads.	Coroners	Salaries, County Officers.	County Debt Repayment, Principal and Interest.	Reformatories and Industrial Schools.	Lunatics.	County Hall, &c.	Printing and Stationery.	Miscellaneous.	Cattle Disease.
£	£	£	£	£	£	£	£	£	£	£	£
625	607	4,658	967	968	5,518	598	1,027	324	683	714	983

Note.—Other large items of expenditure are met, in whole, or in part, by fees received, and by repayment from the Government.

I have endeavoured in this address to state shortly, and as far as possible abstractedly, the conditions of an interesting problem in political science, without entering into speculative proposals for its solution, which belong rather to the province of debateable politics unsuitable for this occasion. I may, however, remark that the County Boards Bill, introduced by me on the part of the late Government, was designed on the lines above indicated, and that

great care was taken in framing it to provide functions for the new authority sufficient to justify its existence, but not unduly intrusive on the functions of the unions and other local bodies. I may also point to the numerous measures of local government improvement which were passed into law by the late parliament, as illustrating my own readiness to initiate well-considered changes and reforms. What I earnestly desire is that further legislation dealing with various branches of the subject (the need for which can hardly be exaggerated) shall be prepared and carried out in a similar, that is, in a sympathetic and not in an iconoclastic spirit.

Address *of the* President *of the* Department IV, "Economy *and* "Trade" *of the* National Association *for the* Promotion *of* Social Science, *at the* Twenty-Sixth Annual Congress, *held at* Nottingham, *in September*, 1882.

By Professor Bonamy Price, LL.D., Edin.

I beg to invite the attention of the Congress to two mighty struggles which have been carried on this year within the domain of Political Economy. They have awakened, especially the first, the deepest interest throughout the country. The wealth and prosperity of the whole people have been felt to be largely concerned in the issues to which they would be ultimately brought. No small amount of excited and even angry passion has been aroused by the battles that have been fought. The first has agitated great industries; it has brought mighty forces into play; men of no small intellectual ability have led on the movement, and the contest had to be fought out within the walls of Parliament. The second has been less vehement, and has, as yet, generated less general excitement, but it has agitated, and agitates still, some most important trades which hold themselves to be seriously injured by errors prevailing amongst political economists and adopted by the supreme legislature of the country. Such struggles of economical opinion, and the grave importance of the judgments it ultimately pronounced, are, it is submitted, well worthy of being carefully examined by an association which has political economy for one of its departments.

The first of these contests is the war which has raged with so much heat in so many of the trades of England between free trade and fair trade; the second is the assault made by bimetallists on the character of the money with which the supremely important process of buying and selling is carried on in this country.

As to the first, it will be universally acknowledged that free trade is a principle which belongs to the very essence of that body of teaching which is called political economy. Overthrow free trade, show it to be erroneous, then unquestionably political economy will receive a fearful wound in the authority which it exercises over the intellect of this nation. Free trade, economists maintain, is the one paramount benefit which political economy has conferred on the world. Free trade has made the name of Adam Smith immortal, not only for the truth which he demonstrated, but also for the immense gain which he thereby made

available to the human race. Nevertheless this great truth does not command that universal acceptance to which it is entitled, nor is that large gain realised as widely as it deserves. Down to this very day, amongst highly civilised nations, that truth is distinctly rejected, and defections are constantly making their appearance, where it had been accepted and its enriching action fully accomplished. No other truth, so certain and so beneficial, has ever been exposed to such incessant and irrational rebellion. The opposition to free trade is one of the most surprising facts in human history; what can be the cause of an event so startling? We have not to travel far to obtain the explanation; it is found in a fact which is profoundly characteristic of the industrial life of men. The production of wealth, of the things needed for human existence and prosperity, is ever susceptible of improvements in the processes it adopts. Those improvements are constantly occurring in new localities, in places better suited for the business, or possessing higher talent in their inhabitants for accomplishing the results aimed at. Better and cheaper goods are made; they are bought more readily, and tend to take away the trades from the towns or countries which had previouly carried them on. Thus loss, anger, resistance are generated; and the free trade, which bids buyers to seek the best and cheapest goods, is denounced and resisted. When such events occur in the same nation, and a particular trade leaves the district where it had formerly flourished, opposition is impossible; men must, and will be, free to buy where they choose in their own country. But when the makers of the improvements, be it from a richer soil, or better materials at hand, or higher inventive power in the workmen, are foreigners, clamour and opposition become possible, the makers of the cheaper goods are denounced as strangers, as destroyers of native industry, as enemies, and protection, by means of taxation of imports, is called in as the artillery wherewith to carry on war.

Other causes often contribute to bring about the same appeal to an error which helps selfish interests. A Bismarck is ready to depress his nation with loss of wealth from worse and dearer goods bought, when he perceives that the people he rules will resist, probably with violence, direct taxation levied to support the huge army which he has determined that Germany shall possess; he has recourse to protective duties, whose economical disadvantage he probably perceives as clearly as any man.

Amongst other means wherewith to push on this war against reason and common sense, new theories are invented for bringing free trade into discredit, as an abstract and unpractical theory; and other obstacles are brought forward which clever men, with great money interests at stake, are able to frame with much plausibility.

They are always able to find abundant and ever-ready support from shopkeepers, and labourers, and makers of machinery, which the endangered industry gives employment to. Nor is sympathy wanting from men not engaged in business, but full of strong patriotic feeling, and who dwell with pathos on the misery hanging over poor and excellent men whose means of subsistence are threatened with extinction.

Under the influence of causes and motives such as these, the new theory of fair trade has been invented and brought to the front, in the country and in Parliament, to do battle against political economy and free trade. Under such circumstances it becomes very important to examine with the utmost care the real meaning of free trade and fair trade, to analyse the nature of each, to trace out their respective workings, and the effects which they produce. When the temptation to go wrong is so ever present and so strong, when self-interest is driving off the desire of learning the truth, and substituting for it eagerness to discover subtle language for a conclusion already determined on by selfish feeling, the call becomes loud to explain every element contained in the conflicting views, and to endeavour to make the country understand thoroughly whether free trade is as right, as unanswerable, as certainly the one efficient method of developing the people's prosperity as political economy asserts it to be. In conducting this investigation, clever theory and plausible subtleties must be peremptorily thrust aside. Let common sense be the judge to try the issue. Common sense is the foundation, the essence of true political economy.

Let us begin with free trade. First of all, what is free trade? It is a vital matter to define the meaning of the expression accurately. Many meanings can be, and are actually assigned in common life to the word free; but they are distinctly not applicable to the specially defined expression free trade. Thus the abolition of all customs duties on imported goods is frequently demanded in the name of free trade; but that is an unfair treatment of the phrase. The expression free trade gives no authority for such a claim. The free trade of political economy is the free trade of Adam Smith, and nothing else. The abolition of all customs may be right, or it may be wrong; but no judgment either way is to be had by resting the claim on Adam Smith's words.

Then, again, the phrase may seem to forbid all restrictions on trade. Political and other interferences with the free action of traders may be held to be prohibited by the words free trade. The reason already given supplies the answer. Political economy cleaves to Adam Smith's meaning alone. It cannot, and must not, be supposed that any but his meaning can claim the authority of free trade, of being a truth held to be already demonstrated.

This being so, we come back to the question, What is free trade? It seems to me that the essence of the true meaning of the words is that no question must be asked, by the law, as to the place in which any goods were made. Like goods must be treated alike, wherever they may have been produced. Protection, which is universally held to be the contradiction of free trade, does inquire where the goods come from, whether they were manufactured at home or abroad. It says, if they are foreign products they must be taxed on their importation; the same goods, if made at home, shall be free of all duties. Protection does not concern itself with raising revenue for the State; its sole object is to create a distinction between goods made at home and those made abroad. It seeks to make the foreign wares dearer, to impede their importation, to put them under a disadvantage for sale by the side of home products. Free trade can admit without remonstrance the charging of duties on foreign articles, but upon one condition—that the like articles are not produced at home. It makes no objection, on the score of violation of its essential principle, when a duty is imposed by Parliament on the importation of tea into England; there is no favouring of home-made products to the disadvantage of the foreign, for tea is not grown in England.

Which, now, is the right policy, free trade or protection? The answer to this question is clear and easy. Protection arbitrarily and designedly compels consumers to buy the same identical goods from dearer makers instead of from cheaper, because the dearer producers are fellow countrymen. It intentionally, by means of duties levied on importation, raises the prices of the foreign goods, and then drives them out of the market. The difference of price between the dearer home made goods and that of those produced abroad is clearly a tax inflicted on the whole nation for the benefit of a portion of its traders. Without that tax the cheaper foreign goods would be bought. What is this but a poor law imposing a poor rate? Protection diminishes the wealth of a nation by forcing it to employ dearer producers. The wealth lost is consumed by men who live at the expense of the nation, by the action of a very real poor rate. But surely, protectionists reply, you would not suffer a large and flourishing business to be extinguished by foreigners. The nation will be made poorer by such a blow; these industrious traders will lose their employment, and be plunged into destitution. But will they lose employment? reply free traders; will the wealth of the country be really lessened, and the comforts and enjoyments of all its inhabitants seriously diminished? Understand what free trade is and does, and you will see whether it brings loss or gain to a nation, or increase or diminution of employment to its people.

Free trade rests on two fundamental facts. They cannot be too firmly grasped by any one who wishes to seize the vital point of this great contest. The first fact, and it is the cardinal one, is that a nation cannot buy unless it sells. Trade is an exchange of goods; it is absolutely nothing else. Many suppose that to trade is to sell commodities for money; no mistake can be greater. Money is simply and absolutely only an instrument, a tool, for effecting the exchange of the goods bought and sold. Infinitely the larger portion of these exchanges, this buying and selling, is accomplished by pieces of paper with words written upon them. The quantity of metallic money in the whole world compared with the wealth bought and sold is a mere trifle. A nation which could buy only with money would instantly find its trade with foreigners brought to a standstill. Its gold would have gone away in a few days; it could buy no more. This being so, as a hard, dry fact of the real world, it follows irresistibly that if a nation is buying abroad it is also selling abroad to the same extent. It may be that, at the first beginning of such buying, the exchange may be effected by transferring to the foreign sellers investments and debts which had been previously acquired. But that is a process which soon comes to an end; and then, if the purchases continue, goods of equal value must inevitably cross the water in exchange. If the foreign seller refuses to take any English goods, then England must sell to another foreign buyer, who will be told, instead of paying England directly, to pass over the payment to the foreign country of whom she has bought, and the trade will become, as it were, three-cornered. If all foreigners refuse English commodities, then England will be compelled to give up purchases abroad, and must obtain the supply of her wants from English makers. It is scarcely possible for such an event to occur.

The truth taught by this analysis is clear and certain. Under free trade, foreign countries, if they carry on trade with England, must, and do, buy of England as much as they sell to her, and they do afford as much employment to English workmen and capitalists as if she had made all the goods herself, and had bought nothing abroad. The same commodities as are needed for English buyers are now made in a foreign country, but that country, directly or indirectly, calls for the production of English goods of the same value, and English trade and its people are in no way whatever injured. Most plainly, therefore, free trade never can, and never does, do any harm to the country which practises it. No proposition in Euclid is more certain or more clearly demonstrated. Free trade never does anything more than exchange goods made in the free trade country for others made abroad; goods of the same value must be manufactured and sent off to pay for those bought of the

foreigner; there is only a change in the kind of the commodities made. It is impossible for any protectionist to refute this fact, and by it the theory he believes in is killed off.

But there is a second fact embodied in free trade. The goods formerly produced cease to be made in the once protected country; they are now procured from another land, and, be it carefully noted, at a smaller cost: fewer goods are now given to the foreign than were given to the home makers. Less capital and labour are now required to acquire the commodities needed. Thus there is a clear saving of capital and labour, a surplus left over after the foreign have replaced the home commodities. That surplus of capital and labour remains as the net profit of practising free trade. At no greater expense than formerly this surplus of capital and labour remains an increase of wealth. The country becomes richer by the new additional products it grows, though still setting to work only the same quantity of effort and cost, the same amount of capital and labour.

The conclusion demonstrated by these facts is irresistible. Free trade is always right, protection always wrong. Protection always brings loss of wealth, whatever be the motive which may lead to its adoption. It admits of no defence; reason and common sense alike condemn it. Its professed object is to make a country richer; as a dry, hard fact, it always makes a people poorer. But truth does not always prevail in this world; ignorance, prejudice, personal and private interests, selfish instincts, national sentiment, and other powerful forces resist and conquer it. Free trade may be said to be ever assailed by war; nowhere do the teaching and the practice of free trade receive universal submission. If we look round the world, we still find many lamentable defections from its counsels. Political feelings, anger against the foreigner who reduces or suppresses a home trade, pity for the sufferings of fellow countrymen, and other rebellious impulses war down reason and good sense, and raise up barriers of custom house duties around nations. The majority of the great nations of the world are revolting against free trade, though many must be aware that they are seriously injuring their industrial prosperity. The United States, one of the most intelligent of peoples, have surrendered their understanding to the blind passions of protection, and actually consent to see their commercial fleet driven off from the carrying trade of the whole world by their own act, by compelling their merchants to build ships with American iron. England, to her infinite honour, has listened to the voice of truth, and has opened her ports and markets to all merchandise without asking from whence it came.

Yet even in England peace has never been absolutely triumphant. Trade encounters painful oscillations of profit and loss; bad

seasons, both at home and in countries which are large buyers of English goods, wars which have impoverished customers, and other causes have been active in diminishing trade. Above all, amidst such sufferings, to see foreign nations levying heavy duties on British goods, whilst England throws open her markets without a charge to every trader on the globe, has kindled a strong feeling of resentment in many hearts, and has raised a hot and angry cry for retaliation. Cheapness has been denounced as a national calamity; a marvellous sentiment truly from the lips of men professing to be in search of the enjoyments and utilities which wealth bestows. Competition is held up to public reprobation as the monster evil of our day. To get rid of its presence, and to acquire for home manufactures a comfortable and assured possession of the supplying of English buyers with the goods required by human life at handsome prices, a powerful league has been formed by eminent merchants and traders to rescue suffering industries from the assaults of strangers. A loud demand for retaliation has been fanned into a hot flame. Why should men who drive away English products from their ports by prohibitory custom dues be suffered without restraint to crush down hard working Englishmen in their own country by low prices?

Under such feelings a new principle, a new conception of trade, is invented and preached. Fair trade is the true thing, the right policy to be always adopted. Fair trade is the title which the league has adopted: it calls itself the Fair Trade League. Fair trade is defined to be like for like—protection for protection, and, but not so clearly pronounced, free trade for free trade. There is a grand sound of justice in such a name; it is sure to attract supporters from many quarters.

But this is not all the artillery which is brought to bear against free trade. A clever addition is made to the policy of the league. The sense of empire is called out in every Englishman's heart. England possesses a vast colonial empire, in which India also is included; but the colonies have independent legislatures, some of whom have adopted protection, even against the products of the mother country. The ambition of the league is to gather England and her colonies into one great trading empire; with real inconsistencies of doctrine for the league, the colonies are to be invited to abolish their policy of protection against England. In exchange for this concession, they will constitute with the mother country one nation—with absolute free trade between all its members, and the result will be to "transfer the great food growing industries we "employ from protective foreign nations, who refuse to give us "their custom in return, to our own colonies and dependencies, "where our goods will be taken duty free, with the sole exception

" of revenue duties ! " A vision of a vast trade is flashed before the mind, fed by an immense empire, and able to inflict retaliation and punishment on foreign nations which tax our goods. Whether it is reasonable to expect that colonies now practising protection against the mother country will find in this imposing scheme any motive or compensation for abandoning it we need not stop to inquire ; it is sufficient to perceive that the vision of a vast empire taking the products of the mother country without the burden of protection must exercise no small fascination in attracting supporters to the action of the Fair Trade League.

We ask now, What judgment must be passed on fair trade as compared with free trade ? It turns on one single point only :— Is retaliation a winning process, a wealth creating policy for a nation to adopt against a foreign country that inflicts protective duties on its goods ? In one sense it is conceivable that retaliation may be defended. It may be employed as an act of war to bring the protective nation to its senses, as a punishment inflicted for mischievous and erroneous action. But this is a consideration which lies entirely outside of political economy. It belongs to the province, not of the economist, but of the statesman. The economist informs him that all war involves loss of wealth ; it is for the statesman to decide whether such a war against protection practised by the foreigner is likely to obtain the end for which it is had recourse to, and whether, when obtained, it will be worth the cost incurred. But retaliation, as a permanent course to be pursued by a country attacked by protective duties, belongs entirely to the decision of the economist. The enemy is determined to inflict protective duties as an unchangeable system ; it is for the economist to report whether counter protection will win greater wealth for the nation assaulted than persistence in free trade.

The judgment is easy. It has been shown, and must be taken for granted here, that free trade increases the wealth of a country, and protection diminishes it ; consequently, by giving up free trade and substituting for it protection, a certain and abiding loss of wealth is incurred. Is there any compensation obtained for this loss by making the foreign attacking nation suffer a loss on his side by putting duties on his wares ? None whatever. The facts are simply these. England incurs a loss by America putting a heavy duty on English iron. Her trade is diminished ; her power of acquiring wealth is lessened ; there is less demand for her iron, the iron industry suffers. But at the very same time she is reaping a very real gain by procuring corn from America duty free. America derives a profit from this sale of corn ; England does the same. Both win, both are enriched ; but England, of course, is injured by the duty charged on her iron. Now let England retort

with a counter duty on the corn sent by America. The price of the American corn is raised in England, or its importation stopped altogether. In either case England loses. Her people must pay more for their bread without any compensation for this additional cost. American wheat becomes dearer, and with it English wheat also. The farmers make a gain, but at the expense of every consumer of bread in England. Without the counter protection England would have had the same quantity of bread, and by means of its cheapness, an addition of other goods besides, with the same cost of capital and labour. This is incontestably a second loss. Two losses, instead of one, ruin the policy of retaliation; it is an inexcusable blunder to practise it.

So judged the British parliament when the issue was brought before it last spring. It repudiated the policy of fair trade. It ought to be a matter for great rejoicing to the whole nation that it was ruled by a legislative that possessed so thorough a knowledge of the matter it had to deal with, and saved the people from what would have been a heavy, self inflicted calamity. The more this great question is studied, the more evident does it become that the assertion made above is true, that free trade is always right.

We pass on now to the second struggle which has agitated the domain of political economy, the fight for bimetallism. This is a subject of a very different nature from that of free trade *versus* fair trade, and unfortunately far less generally understood. It will compel us to enter into greater detail.

In the first place, what is bimetallism? It speaks of two metals used for making coins; but the use of two such metals is not bimetallism in its technical sense. England employs two metals for making coins with, gold and silver; but she is not a bimetallic country, for two reasons. First, the mint is under no obligation to coin all the silver which may be brought to it; only enough is coined as shall satisfy the want for small change, enough to buy with in small shops and small markets. Secondly, silver shillings are not legal tender for more than forty shillings of debt. No creditor is bound by law to accept on presentation forty-one or more in discharge of the debt due to him. Under such a system a large mass of silver coin could not be needed, and if coined would incur depreciation of value. Bimetallism, on the contrary, coins all the gold and silver presented to the mint in a fixed ratio towards each other; and such coins are legal tender to any amount.

But we have not yet reached the essence of what is called bimetallism. It expresses a very peculiar demand made by its advocates. That essence is the requirement that in the coins gold should be related to silver in the proportion of $15\frac{1}{2}$ ounces of silver to 1 of gold. This is a most peculiar, nay, a most strange demand.

In the metal market, at the shops of the bullion dealers, gold is worth about eighteen times as much as silver; that is the proportion in which the two metals stand towards each other, that is the value of each metal; one is worth, can buy, eighteen times the weight of the other. It is plain, therefore, that a coinage which decrees that $15\frac{1}{2}$ ounces of silver shall reckon and shall be available for paying a debt of one ounce of gold is false money; it is untrue, the relative values of the metals express a proportion which no dealer in metals in the metal market would listen to for a moment. He would ridicule the idea of giving to a man who brought him $15\frac{1}{2}$ ounces of silver an ounce of gold. He would be a heavy loser by such a sale; yet this is precisely what the bimetallists are clamouring to effect. Such money would not do the work of true barter, true buying and selling; it would not give equal for equal, value for value.

This is a matter of vital importance for the every day life of every man; and so it becomes in the highest degree necessary, in order to know how to deal with it, to master thoroughly the true nature of money, what it is, and how it does its work in the world. All nations use money, cannot live without it; all handle it, all talk about it, yet probably there is no subject so entangled as money within the whole range of political economy. Every man thinks and speaks as if he knew all about it—yet how many can tell clearly what money is!

What, then, is money? How was it born into the world? What work has it to do, and how does it do that work?

Money is a tool, nothing else—as really, as simply a tool as a knife. Precisely like a knife it is sought and acquired, not to be possessed for its own sake, but solely for the sake of the work it performs. And what is this work, what is this tool wanted for? To effect exchanges, to be given away in exchange for something else, and then in turn to travel on and to make a second exchange. It obtains for its possessor some commodity or service which he desires. But why was such a tool needed? Why could not commodities be exchanged for each other by means of direct barter? Because direct barter would have been arrested by the greatest difficulty which the social life of mankind could have had to encounter. Human beings, unlike animals, were formed to make various commodities for each other. How were they to be exchanged? How could the men who mutually wanted each other's goods be brought together for exchanging? A farmer required a coat, but no tailor was in search of a calf: how was he to obtain clothing? Here were two buyers and two sellers, yet neither could procure what he wanted. Money was invented to overcome this most embarrassing difficulty. The farmer sold his calf to the

butcher for money, and exchanged that money at the tailor's for a coat. Money served as a mere tool for exchanging indirectly the calf for a coat. The embarrassment was instantly removed; the exchanging of all commodities was easily effected, and the greatest principle of associated human life was established—division of employments.

This analysis brings out at once the greatest characteristic of the tool money. It is ever circulating. No one takes it for its own sake, to be retained for use and enjoyment. Every man receives it for the very purpose of parting with it again. Money ever kept locked up is an utterly useless tool. It works only when it circulates, when it passes into another man's hands.

The fact that money is nothing but a tool enables us to answer easily the question, How much money is wanted? As much as we can get, shout the multitudes who believe in the mercantile theory, who are delighted with the right balance of trade when a country exports more goods than it imports, and is ever receiving the difference in money. Such persons are wholly ignorant of the real nature of money, that it is nothing but a tool.

The rule for the numbers of all machines is the same universally: so many tools are wanted as shall be able to perform the work required to be done. Any excess beyond this number is a pure superfluity, a waste of the expense which it cost to make the machines. The work which money has to perform is to exchange commodities. This it does by circulating, by being taken by a seller of goods to be given away in turn by him as a buyer of other goods: it does nothing for him except to buy with when he has sold. This useful service it performs only when it leaves his hand. Money, coin, is wanted for ready money buying only, and trifling is the quantity needed for such buying in comparison with the gigantic amount of sales and purchases effected by pieces of paper called bills and cheques. Alas for the theory of a favourable balance of trade by the side of such facts. The money flowing in from abroad—which, be it observed, is not new wealth gained, but only metal paid for with goods of equal value sent away—when a country has enough to serve as ready money, is a lot of useless tools which must be locked up in chests and vaults. Has any man ever been known to go on buying more tools than he can use? Would he be admired for such conduct? Of course a reserve stock is required for money as for most tools, but that is a matter which does not enter into the discussion of its nature.

Now arises the fundamental question which it behoves every man to grasp—yet how many can answer it? No man understands what money is, if he is unable to see the answer. How does money perform its work? The tool, knife, works by means of its sharp

edge—it cuts; every one sees this instantly; but how many can tell how it is that money buys? It works by means of its worth, its value, as a piece of metal. On this cardinal fact all understanding of what money is hangs. The whole battle with the bimetallist turns upon it. To buy is to exchange one thing for another on the basis of the value of the one being equal to that of the other. But what is the quantity of value which each possesses? That is the critical point. In common life, the value of the thing is held to be its price, what it will fetch in money; but that leaves the value of the money fetched unexplained. We obtain that explanation by saying that the value of the money is calculated in the same way as that of the article bought. The amount of the money given is determined by the cost of producing the metal, precisely as the price of a coat or a loaf of bread is determined by what they cost to produce. The quantities of the metal and the commodity exchanged are regulated in the same way. As Aristotle pointed out, gold, money, is chosen simply as one of many commodities. The cost of production of gold or silver is the amount of goods of all kinds which the miner must have to induce him to get the metal out of the mine. As all commodities are exchanged for the same article, the precious metal, their several values are expressed in, are measured by, the value of the metal of which money is composed. Each has a price in money; their values can all be compared with each other.

But it must never be forgotten that the value of money is subject to a most disturbing force, which creates incessantly severe fluctuations in its power of purchasing. Money, like every other commodity, falls under the universal law of supply and demand. As a rule, its power to buy consists of its cost of production. If that cost is not replaced, on an average, by what it procures of other commodities in exchange, it will not be dug out of the mines, precisely as wheat will cease to be grown if the variations in the quantity gathered, caused by the seasons, do not balance each other and remunerate the farmer on a series of years. These fluctuations in the value of money, however, are more frequent and last longer than those which befall most commodities: and the disorder and mischief they bring with them are often most serious. Changes in the value of money alter the values in the market of all other articles, as well as the worth of the yield of all investments. By the same stroke, as it were, they enrich and at the same time impoverish multitudes. Mines are most variable in the quantity of the metals they yield: their power to affect prices is enormous. Nevertheless, these changes in the intrinsic worth of the precious metals have not been so excessive as to expel them from being used as the money of the world. Their power in exchanging is, as a rule, their cost of production, and that is what

must on an average be given to the miners to induce them to continue mining, subject to the fluctuations created at times by the state of their supply and demand in their markets.

Here I hope I may be forgiven, if I venture to repeat a little tale which I have already told elsewhere: it singularly reveals how money performs its work. I was leaving Geneva a few years ago, and paid my bill to the landlord of the hotel with English sovereigns calculated in francs at the rate of exchange of the day. He then looked over them in his hand, and asked me whether I could give him a Queen Victoria sovereign in exchange for one with the King George and the Dragon. I did so, and asked him why he preferred the one sovereign to the other. He instantly replied, "Sir, all these sovereigns will be melted before to-morrow "evening; the King George and the Dragon was coined many "years ago, and is probably of light weight; the Queen Victoria "is modern and of full size." No answer could be more instructive. The nature of money and its mode of action stood forth in the clearest light. Manifestly I paid the debt I owed with pieces of metal, with a certain weight of gold: as such the landlord treated them and accepted them as payment. Food and lodging were exchanged by direct barter for small lumps of gold of given weight and purity.

Steadiness of value is the highest virtue which money can possess. Its importance is supreme. Every man who sells, takes money on the faith that he will be able to purchase with it other articles worth the one which he had given away. If he buys at once, he is sure to accomplish this; but what if he purchases property which is meant to be kept for many years? Think what the consequence would be if the value, the buying power of money, was suddenly doubled or halved by altered cost of production; conceive the effect of such a change on the value of land and houses, on all fixed incomes or the returns from all investments. Look at what would happen in consols alone. Those whose fortunes were laid out in the funds would become twice as rich at the cost of the nation, or only half as rich, to their own ruin. Unfortunately, perfect steadiness of value is unobtainable, for the mines which produce the precious metals are liable to fluctuations in their yield to the labour and capital by which they are worked, and then the cost of production of the metal, that is, its value, is changed. It is a misfortune which cannot be entirely avoided, but it may be affirmed with truth, that these fluctuations in value have not been so heavy as to render the precious metals unfit to be the tool of exchange. In steadiness of value gold is acknowledged to possess signal merit.

Further, it is obvious that the worth of the precious metals falls

under the law which rules the value of all commodities, the law of supply and demand. The mines may be fitful in their yield, war may call for large quantities of money, great developments or fallings off in trade may vastly increase or diminish the want of money, and thus mischievous alterations in its value may be generated.

It may now be asked, if money works by means of its value as a commodity, how comes it to pass that pieces of paper which speak of money, but do not give it, can buy as easily as coins? The answer is not difficult. Money works, not by any of the physical properties of the metal of which it is composed, but by its value. A note is a ticket for some metal left in a cloak room. The metal is not in hand and does not pass, but its value does pass, is transferred to the possession of the seller, and its embodiment in writing suffices to do the work of the money pledged by the written paper.

We reach now the battle between monometallism and its rival, between a single or a double standard for money. It must be clearly understood that it is a fight for one legal tender or two, for that I hold to be the meaning of the word standard. A standard is metallic coin which the law commands a creditor to receive as the full payment of the claim which he has against the debtor. Ought coins made of gold or coins made of silver to be the legal tender of a nation, or either of them at the choice of the debtor? Here, at starting, I beg to call your attention to very weighty words written by a great authority in these matters, Mr. H. Hucks Gibbs, ex-governor of the Bank of England: "With a single "standard, every one who buys and every one who sells knows pre- "cisely what it is that he gives and what it is that he receives for "the commodity with which he is dealing. Of the single standard "of these realms, I will say, that if nothing else had to be taken into "consideration, and if we had dealings with no other country but "the British Islands, our system would be perfect." And, mark well, this declaration was made by an eminent bimetallist. These are admirable words. The principle they proclaim is the very essence of a good monetary system. They tell us that the money of England is perfect, that any man in England who gives or receives it knows thoroughly the meaning of what he does in buying or selling a commodity at a stated price. He understands the precise nature of the exchange he is making between the worth of the article which is exchanged for money and the value of the money given for it. What higher quality of good money can be conceived? This energetic and distinguished bimetallist tells England that she has the best conceivable money, and yet he labours hard to deprive her of it. He toils to persuade the lawgivers of England

to get rid of the perfect system and to adopt an inferior one. His judgment on English money is final and complete; it is excellent—best that can be invented. The merit assigned to it ought to be decisive: it bids Englishmen to hold fast the excellent tool of exchange they possess, and not to strip themselves of the precious utility of that excellence. And what is the reason put forward for urging a change which may well be thought so extraordinary? Regard for the inhabitants of England in respect of the enormous money transactions which they carry on in their own country? Nothing of the kind. Their dealings with foreign nations are alone thought of, and the inferior moneys they possess. Would it not be a wiser, a more intelligible course to pursue to exhort these foreign nations to listen to good sense, to give up their inferior money systems, and to take in their stead the perfect money with which England is blessed?

Since, then, the English system is thus perfect, the system of a single metallic standard—it becomes highly desirable that we, who are asked so vehemently to abandon it, should understand what it is. It might seem that Mr. Gibbs's description of it is incorrect. Two metals, and apparently two standards, form parts of it. Up to forty shillings, as has already been said, the creditor must accept the shillings: is not this a second standard? At first sight it might certainly be so understood, yet Mr. Gibbs is right—there is only one money standard in England. The difficulty is in the shilling; the shilling must be explained. The money of England contains three metals, nevertheless it buys and sells only with gold. The shilling does not buy with its silver alone; it gets help from gold. The definition of a sovereign is a given weight of the metal gold; it states all that a sovereign is. The definition of a shilling is radically different; it is the twentieth part of a sovereign. In value the silver of a shilling is not equal to the twentieth part of a sovereign; there is not silver in it enough for that. A shilling, really, is a token; it indicates something else, namely, the gold lying in it unseen. Twenty shillings by law are the equal of a sovereign. This fact, coupled with the inadequate quantity of silver, reveals the token. In a much wider sense yet is this true of a penny; it is the twelfth part of a shilling, the two hundred and fortieth part of a sovereign by law. The value of its metal is not the thing which counts, but the value of the sovereign with which by law two hundred and forty pence are exchanged.

For what reasons, we now ask, do the bimetallists demand that the gold standard, which is pronounced faultless, should be supplanted by bimetallism? The frequent and heavy depreciations in the value of silver have been the explosive force of the whole of its action. Those who had large debts to receive from nations

using silver or had to buy in countries using gold have suffered severe and incessant losses. Foreign nations, whose money was silver, and all property sold in them was paid for in silver, were hit hard in paying debts of trade due to gold-using nations like England. They were compelled to pay for what they owed to those countries with much more silver; more francs had to be given for the sovereign due in England. India, too, was more struck by the sinking value of silver than probably any other country. A larger quantity of silver had to be given for purchases made in England. Loans, or the interest due on them, for railways and similar purposes, which India was obliged to pay in English money, compelled more silver to be remitted to England at the heavy cost of the senders. Then again, a large portion of the national revenue of India had been settled a century ago in fixed amounts of silver rupees; when those rupees sank in value from two shillings to eighteenpence, a most severe diminution of the public income was sustained, whilst the demand for expenditure was ever increasing. The Americans, too, being large producers of silver, joined loudly in the outcry, and stirred up several leading nations to make a revolution in their money. In all directions they clamoured that money should be made of silver. Many Englishmen were deeply interested in these events. It was very unpleasant to Englishmen trading with India to be paid with rupees which could be converted only into much less English money, whilst the selling prices of their goods in India had not gone up; thus loss and embarrassment sprang up in the Indian trade. These and other like causes created trouble on all sides. Germany found out the same truth as had forced itself on Mr. Gibbs; it changed its currency, discarded silver, and for it substituted the perfect metal gold. By this act she extricated herself from much harm, but she also thereby increased the losses and the anger of silver using and silver producing countries.

Out of this tumult of losses and discontent, generated by the heavy depreciation of silver money, sprang up the war of bimetallism against monometallism. The bimetallists attacked the single standard of gold with an arbitrary theory. The law, they exclaimed, can and must make $15\frac{1}{2}$ ounces of silver worth an ounce of gold at the very time when that ounce of gold fetches 18 ounces in the metal market. The bimetallist decrees that silver shall have two prices in England, one that it possesses as an ordinary commodity in its own market, the other in the currency of the country. Thus a large unnatural increase of value is given to silver. The interest of the nation is despised, its perfect system of currency is thrown to the winds, the profits of the owner of silver govern the situation, and practical common sense is outraged

by the determination to give two prices to the same article, at the same time, and in the same country. Law is to perform this miracle. It is true that silver has stood towards gold in the proportion of $15\frac{1}{2}$ to 1, but this came from the fact that at that time the price given by the law was in harmony with that which existed in the open market for silver. France and the Latin Union gave this value to silver in their currencies, and succeeded in maintaining it for a while, but then the natural value of silver was higher. Indeed, it is held that it was at this period the dearer metal, dearer than the price given to it of $15\frac{1}{2}$ to 1. But successful mining made silver much cheaper, and the bimetallic law could not prevent its fall in value. The Latin Union, we are told, has given up the attempt to maintain by law a ratio of value between the two metals.

But let us suppose that the false ratio is adopted and continued on in England, what will be sure to befall the two metals and the currency? Gresham's law will assert itself, the undervalued metal will leave the country. Foreign nations will pay their debts to England with cheap over valued silver. We are assured that there is a vast demand for gold in Asia, and also an immense stock of silver. Merchants will buy that silver at the low value of 18 ounces for an ounce of gold. They will send it to England, and get it coined into the new shillings. With $15\frac{1}{2}$ ounces of these silver coins they will get an ounce of gold, take it across the water to Asia, and sell it there for 18. They clear a profit of $2\frac{1}{2}$ ounces, and the pleasant operation will be continued till the gold coins of the country are carried off. Is this the result which the bimetallists desire? They have never yet shown that it will be possible upon their system to escape it. Gold will be cleared away from the money of the country, and along with it bimetallism. Monometallic silver money will have absorbed the whole currency. There is an abundance of silver underground wherewith to carry out the operation.

It is not easy to believe that any bimetallist who can think has persuaded himself that this scheme of currency can live by the side of two markets, two contradictory prices for silver; he must be nursing himself with the pleasant illusion that if all nations agree to use gold and silver for their currencies upon one and the same valuation of the metals, the real metal market will follow suit, and adopt the same relative prices for the metal used for other purposes.

But now there is a question which ought to be put categorically to every bimetallist, and which he is specifically bound to answer. He seeks to make England a bimetallic country, to make both metals legal tenders in her currency, to place silver on the same

level with gold. In organising this change at the present hour, why does he not take the two metals at their true, their actual market values? Why does he not make the start with a ratio of gold to silver of 1 to 18? Why does he not demand that in the coinage 18 ounces of silver shall be the value of one ounce of gold? It is impossible for him to give a reason, within the principles of currency, why he should not, in framing his new system, give to the coins of the country the respective values which belong to them as metals. The essence of money, as has been stated, is to give equal for equal, value for value. How can it be repudiated with credit by men who are carrying out a revolution in the name of reform? To build on an untruth is not the deed either of good statesmanship or good business. Again I ask of every bimetallist, why do you not, in preparing what you call the right system of currency, give to each of the two metals which you establish as legal tender the value which belongs to it in the bullion market? If an answer is refused, is it impossible to escape the suspicion of selfish motives or ignorance of the nature of money?

But whilst dissenting absolutely from the system of currency now proposed by the bimetallists, I am anxious to express my conviction that the use of silver in the money of the world is a matter of great importance. The numbers of mankind are rapidly increasing. Civilisation is expanding in all directions, and is constantly calling for an enlargement of all the machinery required for ministering to its wants. That the need of much larger supplies of metallic money will steadily grow in urgency is incontestable. Gold alone would, almost certainly, be unable to meet the demand; its value might be very largely increased, to the utter confusion of investments and debts; silver would have to be called in to give help. I have not seen any other method for accomplishing this object, consistently with the nature and laws of sound money, except the plan suggested by Mr. Clarmont Daniell, in his pamphlet "Gold in "the East." He adopts one governing standard for all the world—gold. With this he associates silver as a second legal tender to any amount, but upon the express condition that its value in the bullion market should be ascertained from time to time, and the proportion which the silver coins shall bear to those of gold be determined and proclaimed by competent authorities. Silver would then stand in its true and just relation of value to that of gold in the national money, and it would be a matter of indifference whether payment of purchases or debts was made in gold or silver coins; and I may add that we are told that "from 1257, when gold was first coined in "England, to 1664, when the first guineas were struck, the rate at "which gold should exchange for silver was fixed by proclamation "from time to time!"

This plan of forming a double standard founded on sound monetary principles does not meet with the attention it deserves. It needs discussing before it can be said that it will work successfully. The false ratio of 1 to $15\frac{1}{2}$ of gold to silver has been advocated and pushed forward by men of great ability, yet a system perfectly true in principle for obtaining the very object sought, a double standard of gold and silver, has received from them no notice whatever. Indeed, at the meeting of the International Monetary Association it was received with laughter, evidently on the supposition that the authority proposed by Mr. Daniell might put on silver any artificial value at its pleasure. It would have been well if the author of this merriment had taken the pains to understand what he was speaking about. It is a most fundamental element of Mr. Clarmont Daniell's plan, that the value assigned to silver in the coinage should be the very same as its value as metal in the market. Clearly that value would necessarily vary from time to time, because the value of silver as a commodity is subject to many variations, but that defect is inherent in the supply of the precious metals from the mines. To study Mr. Daniell's system, and to endeavour to procure from it some workable method of adjusting the coins of the currency to each other, would be a process far wiser than recklessly to clamour for a ratio of 1 to $15\frac{1}{2}$ for gold and silver at the very time when they can be bought in the metal market in the proportion of 1 to 18.

The war of the metallisms is still raging. An appeal to the judgment of parliament has not yet been made. It is clear that many conversions of members of the House of Commons must take place before the bimetallism of a false proportion between gold and silver can be victorious.

The Small Pox Epidemic *as affected by the* States *of* War *and* Peace. *A* Paper *read at the* Twenty-Sixth Annual Congress *of the* National Association *for the* Promotion *of* Social Science, *held at* Nottingham, *in September*, 1882.

By William A. Guy, M.B., Cantab., F.R.C.P., F.R.S.,
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At the June meeting of the Statistical Society, I treated the subject of small pox as it had prevailed in London for nearly two hundred and fifty years. My materials consisted of the returns given year by year of the deaths by small pox, the deaths by measles, and the deaths from all causes in the London Bills of Mortality from 1629 to 1831, and in the Reports of the Registrar-General from 1841 to 1881. The figures for small pox and measles, reduced to ratios of 1,000 deaths by all causes, supplied the needful standards of comparison of year with year, and term with term. See the Tables in the Appendix to the paper just referred to, at p. 430 of the September number of the *Journal of the Statistical Society*, 1882.

These figures and ratios so employed justified certain inferences duly set forth in the body of my paper, and in the summary at its close. The most important of these inferences were, 1, the number, frequency, and magnitude of the epidemics of small pox that prevailed in the eighteenth century, and especially towards the end of it, when compared with those of the seventeenth and nineteenth centuries; and 2, the total absence in the nineteenth century of epidemics of the standard I had assumed, namely, 10 per cent.

To make these contrasts more striking, I prepared a series of three curves, in which the ratios were presented by characteristic lines for periods of forty years in each of the three centuries. These curves I submit to the meeting.* They give an excellent idea of the numerical fluctuations—the ups and downs—which constitute the essential features of an epidemic; and they are more suggestive than the figures on which they are founded of questions which still await solution.

I wish to direct special attention to the high figure represented by the peak which soars above all the rest in the shaded curve that

* They are printed at p. 414 of the September number of the *Journal*, as illustrating my paper just referred to.

represents the forty years of the nineteenth century ending 1880, and to the one built up of broken lines which marks the maximum among the many great epidemics at the close of the eighteenth. It is certainly a very remarkable coincidence—may it not be something more?—that the one considerable epidemic of the forty years of the nineteenth century, and the worst epidemic that prevailed in the eighteenth century, occurred in the years 1871 and 1796, when Paris, the unhappy capital of our nearest continental neighbour, was suffering those privations which always find their worst expression in epidemic disease.

In 1796 Paris was undergoing the horrors of civil conflict, while the French nation was conducting a fierce foreign war; and in 1871 the civil war of the Commune had followed upon an exhausting siege. Were the high figures of those two years, as they occurred here in London, instances of an imported pestilence of unwonted severity stirred up, or intensified, by war, foreign and civil? The figures justify the question, though the universal prevalence of small pox in its worst form in and about the year 1871 cannot be overlooked.* We may have had our share of a universal epidemic without looking to the events in Paris for an explanation of its unwonted severity. Be this as it may, the question of the influence of the state of war on the small pox epidemic is one interesting in itself, and not without a certain bearing on the efficacy of vaccination: for it would be quite as reasonable to attribute the diminished mortality from small pox which occurred in the early years of the nineteenth century to the transition from war to peace, as to the influence of sanitary reforms and improvements.

As a necessary preliminary to this question, we must first inquire to what class of disease-producing influences war belongs; and also make certain distinctions between one kind of war and another, especially between foreign and civil war. For, while civil war concentrates all its evils on the population among whom it is raging, a nation at war with another, and especially when the war is aggressive, sends forth soldiers, sailors, and camp followers, of whom many will die abroad, whereas they would, had they staid at home, have been, in common with the rest of the adult population, possible subjects and victims of any prevailing domestic epidemic.

My attempt to arrive at the truth in this matter will therefore arrange itself under three heads: 1. Of warfare as a cause of

* Dr. Bohn, of Königsberg, in his able and learned work on Vaccination, proves the world-wide character, and exceptionally severe form, of this epidemic by references to contemporary history. He represents it as travelling through Europe from west to east, and extending its ravages to every quarter of the globe. —"Handbuch der Vaccination." Von Dr. Heinrich Bohn, pp. 31—46.

epidemics. 2. Of the teaching of experience in the seventeenth and eighteenth centuries. 3. Of its application to the nineteenth century—the epoch of vaccination.

I. *Of warfare as a cause of epidemics.*

War is a special case of that more general condition of overcrowding, so destructive to health, so productive of disease. It consists in bringing one crowd of trained, armed, and disciplined men into collision with another, under circumstances highly unfavourable to health. It reaches its climax in civil war, in prolonged siege operations, and when armies are quartered among civil populations.

It is only when war is carried on by a nation at sea or on land, at some point or points remote from its own territory, that the mortality among its fighting men, being transferred with them to a distance, lessens the death-rate at home by the deaths which would have happened among those fighting men upon its own soil. In this case that happens which I showed to have taken place in London in 1665 and 1666, the years of the great plague and the great fire. The plague, the fire, and the dispersion and consequent diminution of the inhabitants, worked together to create and explain the low mortality from small pox, as well as from other diseases, which marked those two years.

But if we examine the condition of warfare more closely, we shall see that the nation that engages in war inflicts upon itself some of the evils which it conveys to others; for the mustering of troops implies overcrowding and its evils; and in the wars of the last century, and the earlier campaigns and naval expeditions of this, we know that our recruits, drawn largely from the debtors and criminals of our prisons, and from the vagrant and tramping population, carried fever and small pox with them, to the destruction of hundreds and thousands of our fighting men. Nor is it to be doubted that the cessation from war, no less than the preparation for it, brings with it its own dangers. Disbanded troops have often brought with them to their homes and country diseases which they had contracted abroad—just as foreign captives (soldiers, sailors, and civilians) have set up centres of epidemic disease in the prisons in which they have been confined, in the districts bordering on them, and in the countries they have traversed. Victory and defeat, too, are almost equally disastrous; for the defeated avenge themselves on their conquerors by imparting to them their own diseases, as happened with the French sailors whom Lord Howe defeated on 1st June, 1794.*

But when we come to compare a state of war with a state of

* See my work on "Public Health," p. 264.

peace as prevailing among the same people at different periods of their history, we must not overlook the fact that the condition of that people in times of peace is not one of high health. With the exception of the results of actual fighting, war is to be regarded rather as an exaggeration of unwholesome influences prevailing in the peaceful state than as a strongly contrasted condition. We must bear this constantly in mind if we would not expect a wholly impossible difference between the figures that represent the influence on an epidemic like small pox of the two states of war and peace.

II. *Of the teachings of experience in the seventeenth and eighteenth centuries.*

Under this heading I shall first inquire how much, if at all, the state of external war (for I do not here treat of civil wars and commotions or of minor warlike operations) affected the mortality from small pox in the seventeenth and eighteenth centuries, and then compare the figures for those two centuries with like figures for the first thirty years of the nineteenth century. This inquiry, it will be seen, has a certain bearing on the question of the efficacy of vaccination as preventive of small pox.

I have already drawn attention to the remarkable elevations in the curves of the seventeenth and nineteenth centuries, which mark the high death-rates from small pox that prevailed in the years 1796 and 1871, and their coincidence with the climax of misery in the French capital in the years in question. If now we study these elevated lines and their surroundings more closely, we shall find that while the one is but the extreme among many considerable elevations also presenting themselves at the close of the eighteenth century, during our war with France, the other finds a counterpart in the early years of this century, also during the French war.

In 1796 there occurred the highest mortality from small pox which has happened in the three centuries. The figure was 183·94, or little short of a fifth of the deaths from all causes, and two years later (1798) the death-rate reached the high figure of 128·72. Both years were years of war and of dire domestic trouble both in France and in England. In 1796 we fought and won the naval battle of Cape St. Vincent, and in 1798 we won the battle of the Nile, and crushed the Irish Rebellion. If now we follow our curves back to 1781, when we were fighting both in America and in India, we again encounter a high figure (169·00) in the year 1781;* and this high

* It may be worth while to notice the occurrence in London of the Gordon riots in June, 1780, as favourable to the spread of an epidemic of unwonted severity in the year following; and to raise the general question whether civil wars and commotions, as implying the mustering of crowds and the neglect of the sick, may not go far to account for the severity of the epidemics during their prevalence.

figure does not stand alone. The first year of the nineteenth century, was also marked by a high figure (104·43) coincident with the mustering of a large force of soldiers and sailors for the campaign in Egypt. After this date the high death-rate of 10 per cent. and upwards disappears from the returns; but a near approach to it occurs in the year 1805, when, being still at war with France, we paid the penalty of our greatest naval victory by the death of our greatest naval Hero. The death-rate for that year was 95·92. Once only in this century did a like high figure occur, and that was in 1871, when the cup of misery in Paris was at its full.

It is true that some of our most severe epidemics of small pox occurred in years in which we were not engaged in any external war, as in the year 1787, when the figure was 124·96; but the fact remains that many of our years of war were also years of severe outbreaks of the disease—of outbreaks so severe and numerous as to justify the inquiry which gives its title to this paper.

Now if war, as war, is to be regarded as favourable to a high death-rate by small pox (which death-rate may be assumed to be the result of a wide prevalence of a type of ordinary severity or of a lesser prevalence of a worse type, or of the two combined), such high death-rate will show itself in the average differences which we obtain when we compare a group of years of war with a group of years of peace preceding or following.

I will begin by comparing the ten years of peace, from 1783 to 1792 inclusive, with the first eight years of our great war with France (1793 to 1800 inclusive). The average for the ten years of peace is 88·62, while the average for the eight years of war is 95·88; so that the death-rate by small pox in the years of war exceeded that which obtained in the years of peace by no less than 7·26; and if we count and compare the epidemics for the two groups of years, we find that the eight years of war yield the four epidemics:—

183·94, 128·72, 109·52, and 104·43,

while the ten years of peace yield the three epidemics:—

124·96, 105·66, and 100·10;

so that the epidemics of the years of war are more numerous, and attain a much higher figure than those of the years of peace.

Nor is the general result altered if we compare equal periods with equal periods—the eight years 1783-90 or 1785-92 with 1793-1800; or the ten years 1783-92 with the ten years 1793-1802. The extension of the period from eight to ten years lowers the average but does not destroy the disparity.

If then our inquiry were to stop at this point, we should be justified in saying that times of war are more favourable to small

pox mortality than times of peace; and even if we embrace a much longer period in our comparison, this inference from figures remains unchanged. If, for instance, we take the last half of the eighteenth century, and compare the years of war with the years of peace, the inference is confirmed and strengthened.

Now it happens that the last fifty-two years of the eighteenth century are equally divided between peace and war. We had twenty-six years of peace and twenty-six of war, and these yielded respectively the following figures:—The twenty-six years of peace gave an average of 87·15 deaths by small pox in 1,000 deaths from all causes; the twenty-six years of war an average of 92·20. So that the twenty-six years of war, one with another, gave rise to 5 more per 1,000 of deaths by small pox than the same number of years of peace. Again, these twenty-six years of war show 12 epidemics, the twenty-six years of peace 9: the one being less than a half, the other little more than a third, of the whole number of years. It is also worthy of notice that while the epidemics of the years of war ranged from 183·94 to 104·19, those of the years of peace had the lower range of 172·71 to 100·10.

Hence, by all the tests which it is reasonable to employ, as applied to the last half of the eighteenth century, small pox was more destructive of life during years of war than during years of peace.

In these figures, then, we have strong confirmation of the results established by the figures obtained for the shorter term of eight or ten years at the end of the eighteenth century; and so far we are justified in asserting that small pox, on the average of years, is more fatal in war than in peace.

But it must be admitted to be possible that there was something peculiar and exceptional in the last half of the eighteenth century, and that if we make the same use of the figures of the first half of the century we may not arrive at the same result. I have done this; and I find that, when the figures for the twenty-two years of peace are compared with those of the twenty-six years of war, there is a greater contrast between times of peace and times of war, but in an opposite direction. The figures are as follows:—

Twenty-two years of peace, yearly average.....	80·35
Twenty-six years of war, yearly average	67·32

or an excess in times of peace of nearly thirteen years. As to the number of epidemics, there were 6 in times of peace and only 3 in times of war; the range of the epidemics being in peace 124·90 to 102·13, in war 127·45 to 113·90, so that the maxima and minima in the years of war attained a higher level than in the years of peace.

But I have not yet exhausted all my materials. I have still in

reserve forty years of the seventeenth century, of which nineteen were years of peace and twenty-one years of war. These groups of years yielded the following averages :—

Nineteen years of peace, 63·75 ; twenty-one years of war, 61·12.

This gives an excess of little more than two years and a half in favour of peace as promoting small pox mortality.

In the nineteen years of peace there were 4 epidemics ranging from 124·40 to 101·81 ; in the twenty-one years of war 5 epidemics ranging from 118·24 to 101·98.

This comparison then results in but a small excess for times of peace as compared with times of war. If now we reckon up the aggregate results of the seventeenth and eighteenth centuries, and reduce the figures to an average of the sixty-seven years of peace and the seventy-three years of war, we obtain the following figures :—

Sixty-seven years of peace, 78·66 ; seventy-three years of war, 74·95 ;

or an excess in years of peace of nearly three years and three quarters.

The number of epidemics in the sixty-seven years of peace was 19 ; in the seventy-three years of war, 20 : the range in peace from 172·71 to 100·10 ; in war from 183·94 to 101·98.

On the average, then, of the seventeenth and eighteenth centuries, years of peace were somewhat more favourable to small pox mortality than years of war, though years of war were more favourable to epidemics of extreme violence.

But this statement is true only of the seventeenth and eighteenth centuries taken together ; for we have but to add the figures for years of peace and of war as they occurred in the nineteenth century up to the year 1831, in order to have the aggregate and average figures once more reversed. We get eighty-nine years of peace, with the average 69·90, and eighty-eight years of war, with the average 72·73, being a difference on the side of war of 2·83, or nearly three years. And if we treat as years of peace, or to be more exact, of freedom from serious and prolonged external war, the forty-one years from 1841 to 1881 inclusive, we obtain for the one hundred and twenty-four years of peace the low average figure of 51·63, against the high average of 72·53 for the eighty-eight years of war—a difference of 21·90, or nearly twenty-two years.

But the fact remains (and it is a complete justification of this inquiry) that whatever measure we apply, whether we take the average death-rate of small pox, or the number of epidemics, or their severity, small pox, in the second half of the eighteenth

century, was more prevalent in times of war than in times of peace.

III. *Of the application of the foregoing facts to the prevalence of small pox in the nineteenth century—the epoch of vaccination.*

It has been seen that if we compare all the years of peace which occurred in the seventeenth and eighteenth centuries with all the years of war, it is in the years of peace that the highest average death-rate by small pox occurs. But the figures of the second half of the eighteenth century, taken by themselves, yield a different result. They represent years of war as more conducive to a high death-rate by small pox than years of peace.

I will first assume that the average figures of the seventeenth and eighteenth centuries, taken collectively, afford the true response to the question—is the state of war more conducive to a high death-rate by small pox than the state of peace? and that it is in times of peace that the highest mortality prevails; and I will then turn to the figures of the second half of the eighteenth century, and inquire how far they modify the conclusions to which the earlier figures had conducted us.

1. The most cursory inspection of the figures which represent the death-rates by small pox during the first thirty-one years of the present century (when, be it well understood, the mode of collecting and reporting the facts underwent no change), must convince us that the mortality by small pox in the years of war was much higher than in the years of peace. These are the figures :—

Fifteen years of war, 1801-15,* average	60·76
„ peace, '17-31 „	33·90
Difference	26·86
Fifteen years of war, 1801-15, maximum	95·92
„ peace, '17-31 „	61·78
Difference	34·14
Fifteen years of war, 1801-15, minimum	33·08
„ peace, '17-31 „	21·36
Difference	11·72

These are very remarkable figures, whether we take them by themselves, or compare them with the figures for the seventeenth and eighteenth centuries. They represent the average in peace as but little in excess of the minimum in war; and the average in war

* I have not deducted the short truce brought about by the Peace of Amiens in 1802, a year of high death-rate, and I have omitted the year 1816.

as little short of the maximum in peace. Reduced to a percentage of the average figures, the seventeenth and eighteenth centuries yield the percentage 4·71 as the excess in years of *peace*, the nineteenth century 55·58 as the excess in years of *war*. It was not, therefore, the transition from war to peace that occasioned this remarkable decrease of mortality. The figures themselves supply an argument of irresistible force against the suggestion that this might be the case.

During the seventeenth and eighteenth centuries the mortality from small pox was somewhat *greater* in times of peace than in times of war; in the nineteenth century it was greatly *less* in the years of peace. If then it were alleged by an opponent of vaccination, that the transition from war to peace occasioned the remarkable reduction of mortality indicated by these figures, the figures themselves would furnish a conclusive answer. And yet such an allegation, if it were put forward, would not be more unreasonable than the unfounded hypothesis that changes of diet, improved habits of life, more skilful medical treatment, and sanitary reforms and improvements are severally and jointly to be credited with these extraordinary contrasts. So that, in raising the question of the influence on small pox mortality of these contrasted states of war and peace, I cannot accuse myself of suggesting an unreasonable or needless inquiry.

2. Nor can any apology be needed for the attempt I now make to set forth, and perhaps to account for, the striking contrast which the figures of the last half of the eighteenth century, and especially those of the last few years of it, present to the figures of the first half of it, and of the century preceding.

We have seen that in the seventeenth and first half of the eighteenth centuries the average death-rate by small pox was higher in years of peace than in years of war, but that the direct opposite of this state of things obtained in the last half of the eighteenth century, and in the years of war which brought it to a close; but the figures for these years of war are not more remarkable than those which follow them during the remainder of the war that ended in 1815. I will trace the course of the war and of the peace which followed it, taking them in their order.

In the first year of the war (1793) there was a small pox epidemic, marked by the high figure 109·52; in the year following it fell little short of 100; and in 1795 it fell below 50; but the year that followed (1796) the figure 183·94 was the highest on record. In the next year (1797) the death-rate fell to 30·68, to rise in 1798 to 128·72, to fall in 1799 to 61·26, to rise once more in 1800 to 104·43.

This cluster of epidemics is by no means unique; for twice before

(once in the Seven Years' War, once in the war with the United States, France, Spain, and Holland) we had the same clustering of epidemics. Two facts, however, distinguish the first eight years of our long war with France. The death-rate by small pox attained the highest figure on record, and the year 1800 was the last year of the full epidemic standard of 100 per 1,000, or 10 per cent. It was the year in which we were busy mustering our soldiers and sailors for the descent on Egypt.

At the year 1800 a line may be said to have been drawn, after which no epidemic of the old rate of 10 per cent. occurred. The nearest approach to that figure occurred five years later (in 1805), when the numbers were 95·92. This was the year of the battle of Trafalgar.

I pause for a moment to observe that though this high figure of 90 and less than 100 presents itself at comparatively short intervals, fourteen times in the seventeenth and eighteenth centuries, it was not till after the lapse of sixty-six years, namely, in 1871, that a like figure presented itself in the nineteenth century. It was then 98·37. Here then, after 1805, a second line may be drawn marking the date after which the figure of 90 and less than 100 disappears from the tables, to reappear once only in the exceptional year 1871.

In the seven following years of warfare the figure of 70 (70·74 and 70·34) shows itself twice; and again, after the year 1812, a third line may be drawn, after which the figure 70 disappears. After this, till the end of the war, the highest figure is 51·89.

During this long war of the revolution, therefore, a progressive fall in the death-rate by small pox took place, marked by the following figures:—

After 1796 no epidemic of small pox exceeding 150 per 1,000.
„ 1800 „ exceeding 100 per 1,000.
„ '05 „ ranging between 90 and 100 per 1,000.
„ '12 „ ranging from 70 to 80 per 1,000.
The extent of the fall is indicated by the two extremes 183·94 and 70·34.

If now we turn to the years of peace extending from 1816 to 1831 inclusive, we find the same indications of progressive decrease; for the highest figure (61·78) occurs in the year 1825, while once only, in the year 1817, did the figure somewhat exceed 50 (52·63), and once also 40 (40·93). During these years of peace we meet with such figures as 37·59 and 28·97; and a minimum figure of 21·36, the last figure of all being 22·22.

If from these years of war and peace we pass on to the forty-one years from 1841 to 1881 inclusive, we see at a glance indications in all the figures of the same progressive decrease. With

the exception of the year 1871, the highest figure is 35·29; that occurs in 1844. In 1877, the next highest figure 32·93 is registered; in 1881, 29·24; in 1863, 28·08.

If for these maxima we substitute the minima, or the average figures, the result is substantially the same. A law of progressive decrease, subject to the fluctuations which are of the essence of epidemics, is stamped upon the figures. The decreased death-rate by small pox, which begins in a time of war, continues through the years of peace which follow, and again throughout the mixed period of forty years, being years of peace frequently interrupted by short wars.

As the seventeenth and eighteenth centuries afford us no other example of a decreased mortality so progressive and so considerable, we are forced to the conclusion that some new and powerful cause, or combination of causes, acting continually and with ever-increasing force, must have come into operation. Vaccination, replacing inoculation, and extending its protective influence to an ever-increasing section of the population, is the only force which fully meets the conditions of the problem. The failure of sanitary improvements and reforms to explain the phenomena is obvious, and has been elsewhere demonstrated.*

In bringing this paper to a close, I would point out the fact, as one that ought to be borne in mind, that I have treated throughout only of foreign wars each of some years' duration, not of civil wars, nor of domestic tumults and troubles, nor of other events which may have brought about the formation and dispersion of crowds. If all our wars, long and short, our warlike expeditions, naval and military, our domestic struggles and troubles,—in a word, all the causes that have led to the gathering of crowds, their dispersion, and their transference from place to place,—could be brought face to face with the figures which indicate epidemics of small pox, the results of this comparison of events and figures would probably be found to repay the labour involved.

* See "Two Hundred and Fifty Years of Small Pox in London," September number of the *Journal of the Statistical Society*, p. 20 *et seq.*

MISCELLANEA.

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I.—*The Agricultural Returns for the Year* 1882.

THE following report on the Agricultural Returns of Great Britain for the year 1882, with summary tables, is given in continuation of a series of similar notices to be found in the Society's *Journal* for previous years:—

"I have the honour to submit the agricultural returns of Great Britain for the year 1882, with summary returns for Ireland for the same year. The data for Great Britain have been collected as usual by the officers of the Inland Revenue, while the figures for Ireland have been supplied to the Board of Trade by the registrar-general for Ireland. The particulars for the Isle of Man and the Channel Islands, which are included in the general totals, have been collected by officers under the direction of the respective governors of those districts. The date for which the returns were directed to be obtained in Great Britain, the Isle of Man, and the Channel Islands, was the 5th of June. The usual summary for Great Britain was published on the 17th of August, subject, of course, to slight corrections in the completed return.

"Returns were this year obtained from 552,000 occupiers of land in Great Britain, and from 4,953 owners of live stock only, showing an increase of about 1,600 occupiers of land and 92 owners of stock. The whole of this increase is in England and Wales, where the subdivision of land is noticed in several counties. Some slight allowance must, however, be made for the many cases of one occupier having several holdings, and making either one or more returns at his own convenience, every endeavour being made by the departments concerned to render the filling up of the schedules as little irksome as possible to the farmers.

"It is satisfactory to find that the number of persons who refuse to assist the Government, or rather the public, by supplying the necessary information continues to decrease, the returns obtained by estimate numbering this year 15,595 against 16,452 in 1881. The acreage of the land so estimated was this year 1,453,000 compared with 1,584,000 in 1881, 1,641,000 in 1880, and 2,037,000 in 1877. As has been noticed in previous reports, the great bulk —98 per cent.—of the land from which returns are refused is in England, the estimates for Scotland being only of holdings of 6 or 7 acres each, the occupiers of which speak only Gaelic in many cases.

"A special return was obtained last year of the number and acreage of unoccupied farms and parts of farms in England and Wales. This return has not been continued for the present year, but from the reports of the collecting officers of Inland Revenue, there seems reason to hope that less land is now uncultivated than in 1881.

" The following appear to be the general results of the returns which have been obtained for Great Britain :—

" The total quantity of land returned in 1882 as under all kinds of crops, bare fallow, and grass, amounts to 32,313,000 acres as compared with 32,211,000 acres in 1881, or an increase of 100,000 acres. A great part of this increase is ascribed by the collectors to the reclamation of the moor or mountain land, and a small portion is due to more correct returns from the many farms which have lately changed hands. In some cases of this kind errors arising from the use of local measures such as 'Scotch' or 'Cheshire' acres, have also been discovered and rectified. It appears that the whole of this increase is in England and Wales, and that Scotland shows a smaller cultivated area than last year, there being several instances of decrease caused by the conversion of sheep runs into deer forests in the counties of Caithness, Ross, and Sutherland.

" Looking at the details of the various crops in Great Britain, I have to notice that the area under wheat in 1882 was 3,004,000 acres, or 200,000 acres more than in 1881, in which year, however, the breadth of wheat was less than had been previously recorded. Taking the last fifteen years since 1867, the present wheat area of 3 million acres is greater than that of the average of four years only (1876, 1879, 1880, and 1881) by 100,000 acres, and less than the average of the remaining eleven years by nearly half a million acres. As regards barley, the area sown was 2,255,000 acres, or a decrease of about 190,000 acres from last year, and the smallest area since 1869. The substitution of wheat for barley on these 190,000 acres is generally ascribed by the collectors to the low price of the latter, and this low price is further referred to the use of rice, maize, &c., in brewing, which has been caused by the alteration of the malt tax. It is doubtful, however, whether the unfavourable harvest weather of 1881 was not rather the real cause of the poor price obtained for barley during the past malting season. Oats covered 2,834,000 acres, showing a slight decrease from 1881, although the breadth is above the average. In rye there is a large increase, but it is only an insignificant crop in this country. Beans and peas show little variation, and the total area under corn crops is thus brought up to 8,833,380 acres, or within 15,000 acres of 1881, the average of the last ten years being, however, half a million acres more.

" Turning to green crops, potatoes were planted on 541,000 acres, showing a decrease of 7 per cent., which is attributed to the unremunerative prices caused by the large crops of last year. Turnips and mangold have somewhat declined, and vetches and other unenumerated green crops have increased, making the total area of green crops 3,476,000 acres—a decrease of 1 per cent. from last year, but identical with the figures of 1880. As regards the minor crops, flax covered only 5,000 acres, or about a third of its area ten years ago, and hops were planted on 66,000 acres, but it must be feared that a crop is being picked from a smaller acreage. Bare fallow shows little change since last year; the average area of land left uncropped has, however, been about 25 per cent. greater in the last four years than in the preceding five years, before the agricultural depression became severe. Clover and rotation grasses covered 4,327,000 acres, or 15,000 acres less than in 1881; but on

the other hand permanent pasture amounted to 14,822,000 acres, being 180,000 acres more than last year, and 2 million acres in excess of the grass area ten years ago. In 1872 permanent pasture represented 40 per cent. of the whole area of cultivated land, as compared with 46 per cent. at the present time. Meanwhile corn crops have fallen from 31 to 27 per cent., and green crops from 12 to 11 per cent. of the total.

"Orchards and market gardens in Great Britain again show an increased area, covering respectively 187,000 and 48,000 acres, and the collectors report that although land in the neighbourhood of large towns is continually being absorbed for building, the demand for fruit and vegetables causes the extension of fruit plantations and market gardens.

"As regards live stock, the number of cows and heifers in milk or in calf is nearly the same as last year, but there is a decrease of 7 per cent. in other cattle of 2 years old and above. Young cattle are only 8,000 more than in 1881, so that the total numbers of cattle amount to 5,807,000, or 104,000 less than last year. Several of the collectors ascribe the falling off in 2 year-old cattle to their being ready for the butcher at an earlier age than formerly. The mild winter and consequent abundance of grass in the spring months are also mentioned as the cause of more cattle being slaughtered before the date of the returns, and the want of ready cash by the farmers is further noticed.

"All these reasons are again put forward to explain the continued diminution in the numbers of sheep of 1 year old and above, which were this year 15,574,000 as compared with 16,143,000 in 1881. Unlike last year, however, when the decrease of 2,000,000 was nearly equally divided between sheep and lambs, there is this year a satisfactory increase of 300,000 in the number of lambs, thus reducing the total decrease in sheep and lambs to 260,000, or about 1 per cent. Pigs numbered 2,510,000, as compared with 2,048,000 in 1881—an increase of 22 per cent., which is variously ascribed to the cheapness of potatoes and barley meal, the cessation of disease, and to the growing prejudice in this country against American bacon and pork, due to the fear of trichinosis. Many farmers are also said to have taken advantage of the fecundity of the pig to replace the losses of so many sheep by disease.

"Lastly, there is a small decrease in the number of agricultural horses, and also in brood mares and foals.

"Turning now to the figures of the crops and live stock in Ireland, we find slightly different changes from those in the returns for Great Britain. The total cultivated area has decreased by nearly 100,000 acres, being now 15,212,000 acres compared with 15,304,000 acres in 1881. The diminution is shared pretty equally among corn crops, green crops, flax, and rotation grasses, and the small addition to permanent pasture in Ireland has not been sufficient to counterbalance these deficiencies as in Great Britain. As regards corn crops, wheat was sown on 153,000 acres or about the same breadth as last year. Barley shows a decrease from 211,000 to 188,000 acres, and oats, the most important crop, a very slight increase from 1,392,000 to 1,397,000 acres, thus making with the minor crops a total of 1,757,000 acres under corn crops against

1,777,000 in 1881. In green crops, potatoes were planted on 838,000 acres compared with 854,000 acres last year, and turnips occupied about the same area—294,000 acres, and the total, including mangold, carrots, &c., amounts to 1,249,000 acres. Flax shows a considerable decrease, occupying only 114,000 acres compared with 147,000 acres in 1881. Rotation grasses covered 1,962,000 acres, and permanent pasture 10,110,000 acres against 10,092,000 last year.

"As regards live stock, horses numbered 482,000, or 7,000 less than in 1881. Milk cows and heifers show a small increase, other 2 year-old cattle a decrease, and young cattle a satisfactory increase of 3 per cent., making the total number of cattle 3,987,000, or 1 per cent. more than last year. Both sheep and lambs have, however, diminished, and the numbers are now nearly 30 per cent. less than ten years ago. On the other hand pigs were 1,430,000 in number, having increased by 30 per cent. from last year, and nearly 70 per cent. since 1880. The same causes that have led to so large an increase in pigs in Great Britain appear to have operated in Ireland.

"Taking, then, the figures for the whole of the United Kingdom, including the Isle of Man and Channel Islands, the variations from the returns of last year are not very important as regards the total cultivated area. Corn and green crops and rotation grasses have a less acreage, but permanent pasture shows an important increase, mainly due to the English and Welsh returns. Pigs are much more numerous in each division of the United Kingdom, their increase about counterbalancing the falling off in cattle and sheep.

"The following table shows a comparison of the principal figures for the United Kingdom, including the Isle of Man and Channel Islands:—

Acreage.	1882.	1881.	Increase (+) or Decrease (−).
	Acres.	Acres.	Acres.
Total cultivated area	47,655,230	47,646,112	+ 9,118
„ of corn crops	10,620,196	10,654,697	− 34,501
„ of green „	4,748,257	4,803,211	− 54,954
„ of clover, &c.	6,333,064	6,384,172	− 51,108
„ of permanent pasture	24,963,205	24,767,767	+ 195,438
Live Stock.	Nos.	Nos.	Nos.
Horses	1,905,317	1,923,619	− 18,302
Cattle	9,832,417	9,905,013	− 72,596
Sheep	27,448,220	27,896,273	− 448,053
Pigs	3,956,495	3,149,173	+ 807,322

"I have next to notice the usual table prepared for this report, showing the relative course of agriculture in the counties of England, arranged in two divisions of chiefly grazing and corn-growing counties. The *grazing*, or *western*, division, it may be explained, includes twenty-one counties:—Northumberland, Cumberland, Durham, Westmoreland, York (North and West Ridings), Lancaster, Chester, Derby, Stafford, Leicester, Salop, Worcester, Hereford, Monmouth, Gloucester, Wilts, Dorset, Somerset, Devon, and Cornwall. The *corn*, or *eastern*, division, includes twenty-one counties:—York (East Riding), Lincoln, Nottingham, Rutland,

Huntingdon, Warwick, Northampton, Cambridge, Norfolk, Suffolk, Bedford, Bucks, Oxford, Berks, Hants, Hertford, Essex, Middlesex, Surrey, Kent, and Sussex. Although the number of the counties is the same in each of these groups, the total acreage is larger in the grazing than in the corn division, in the ratio of 53 to 47 per cent. of the total acreage under crops and grass in England. The following is the table:—

Acreage under Crops, and Number of Live Stock, in Grazing Counties and in Corn Counties of England, and Percentages of the Totals in England in Grazing and Corn Counties respectively.

	In Grazing Counties.		In Corn Counties.	
	Acreage and Number.	Percentage of Total for England.	Acreage and Number.	Percentage of Total for England.
Total acreage returned under all kinds of crops, bare fallow, and grass	13,207,955	53·4	11,528,237	46·6
Acreage under—				
Wheat	997,436	35·3	1,832,055	64·7
Barley	628,951	33·9	1,228,591	66·1
Oats	834,773	54·4	698,679	45·6
Rye	16,184	34·7	30,433	65·3
Beans	104,071	25·4	305,369	74·6
Peas	53,528	22·0	189,250	78·0
Total under above corn crops	2,634,943	38·1	4,284,377	61·9
Potatoes	195,349	58·8	136,894	41·2
Turnips and swedes	651,409	44·5	811,415	55·5
Mangold	89,656	27·5	235,882	72·5
Carrots	2,915	24·6	8,917	75·4
Cabbage, kohl-rabi, and rape	53,169	37·1	90,024	62·9
Vetches, lucerne, &c.	117,565	30·2	271,327	69·8
Clover and other grass under rotation	1,343,891	52·8	1,202,381	47·2
Total under above green crops and grass under rotation	2,453,954	47·1	2,756,840	52·9
Bare fallow	284,087	38·7	450,547	61·3
Permanent pasture	7,824,522	66·3	3,976,206	33·7
Flax	1,473	28·9	3,624	71·1
Hops	8,976	13·7	56,643	86·3
Orchards, &c.	137,164	75·1	45,539	24·9
Woods, &c.	*761,892	52·0	*704,146	48·0
Number of horses used solely for agriculture	372,813	48·3	399,241	51·7
Number of horses unbroken and mares for breeding	176,040	56·3	136,401	43·7
Number of cattle	2,684,418	65·8	1,397,317	34·2
„ sheep	7,797,534	52·2	7,150,460	47·8
„ pigs	1,067,689	50·3	1,054,936	49·7

* As returned in 1881.

Acreage of each Description of Crop in Grazing and Corn Counties of England, and Percentage of Total Cultivated Acreage in each Division under each Description of Crop.

	In Grazing Counties.		In Corn Counties.	
	Acreage.	Percentage of Total Cultivated Acreage in the Division.	Acreage.	Percentage of Total Cultivated Acreage in the Division.
Acreage under—				
Corn crops	2,634,943	19·9	4,284,377	37·2
Green „	1,110,063	8·4	1,554,459	13·5
Clover and other grass under rotation	1,343,891	10·2	1,202,381	10·4
Bare fallow	284,087	2·2	450,547	3·9
Permanent pasture	7,824,522	59·2	3,976,206	34·5

" On comparing the figures with those of the last year or two, the variation in the distribution of the crops between the two great divisions are very slight except in a few instances. Thus in the corn crops the percentage in the grazing counties is now 38·1, against 37·9 last year and 37·8 in 1880, wheat being now 35·3 in the grazing counties compared with 35·1 in 1881 and 34·8 in 1880.

" There are a few variations in certain green crops, but the total percentages of such crops are the same as last year. In bare fallow the proportion in the corn counties has again increased; the percentage in these counties being now 6l·3, against 60·8 in 1881, 59·3 in 1880, and 55·2 in 1878.

" Flax has decreased most in the grazing counties, and the percentage there this year is only 28·9, compared with 31·6 last year and 36·0 in 1880. As regards live stock, there is again little difference, but the increase in pigs is most marked in the grazing counties, the proportionate number in this division being now 50·3, against 48·9 in 1881 and 47·5 in 1880.

" Comparative tables have been added, according to the practice of the last three years, showing the imports of food, the prices of agricultural produce, and other particulars for a series of years. These tables are in continuation of parliamentary returns which have been prepared in the department from time to time in consequence of special demands which have arisen, and may be assumed to contain information on points in which farmers and those connected with the agricultural interests are concerned.

" The return of the crops and live stock in British possessions and foreign countries have not been included with this report for some years, as the figures are annually published in the *Statistical Abstracts* relating respectively to the colonies and to foreign countries. With a view, however, of quoting briefly the principal results in the Australasian colonies and in the United States, special application has again been made to the heads of the statistical departments in Australasia, and the valuable monthly reports on the condition of the crops and live stock prepared by the Depart-

ment of Agriculture at Washington have been consulted with reference to agriculture in America.

"As regards the Dominion of Canada, it is to be regretted that no annual returns of acreage and stock are obtained, but statistics of cereal productions have been collected in the important province of Ontario for the present year, which show an area of 1,764,000 acres under wheat, with an estimated crop of 30,784,000 bushels, or 17 bushels to the acre. There were also 835,000 acres of barley, estimated to produce 20,142,000 bushels, or 24 bushels per acre, and 1,426,000 acres of oats, with a produce of 41,651,000 bushels, or 29 bushels to the acre. With respect to wheat only, we can compare the returns for Ontario obtained by the Dominion Government (in 1870), when 1,366,000 acres produced 14,233,000 bushels. The increase from that year is thus nearly 30 per cent. in acreage, and more than 100 per cent. in yield.

"Returns have been received from all the Australasian colonies, and in regard to corn crops we find that the area under wheat at the last harvest was 3,361,000 acres, or little less than last year. The average yield, however, for the whole of Australasia was less than 9 bushels to the acre; South Australia, with a breadth of $1\frac{3}{4}$ million acres, averaging less than 5 bushels, Victoria 9 bushels, and New Zealand alone $22\frac{1}{2}$ bushels per acre. Barley is not an important crop, and amounted only to 106,000 acres, with a yield of 2 million bushels. Oats occupied 438,000 acres, principally in Victoria and New Zealand, where the produce was respectively 24 and 28 bushels to the acre. Maize is largely grown only in New South Wales and Queensland, although it is now being tried in New Zealand. Its yield in New South Wales was 5 million bushels, or about 45 bushels to the acre. Potatoes were planted on 98,000 acres in Australasia, and produced about $3\frac{3}{4}$ tons to the acre, the New Zealand average being nearly $5\frac{1}{2}$ tons. In spite of the phylloxera in European wine-growing countries, there has been little increase in the production of Australian wine, of which $1\frac{1}{2}$ million gallons were made from 15,000 acres of vineyards.

"Turning to the live stock, we find nearly a million and a quarter horses in Australasia. Horned cattle numbered about $8\frac{1}{2}$ millions compared with 4,700,000 ten years ago, the increase being mainly in Queensland, where there are now $3\frac{1}{2}$ million cattle against about 1 million in 1871. The number of sheep has also risen considerably of late years, and now amounts to about $74\frac{1}{2}$ million, of which New South Wales owns 33 million. Pigs show a small decrease from last year, but they number 904,000 compared with 737,000 ten years ago.

"With respect to the United States, the latest returns show in some important States an increase in the acreage under winter wheat, while the acreage of spring wheat has declined about 12 per cent. The total area under wheat is estimated to be little less than last year, when it was 37,709,020 acres. Maize, which covered 64,262,025 acres last year, shows an increase of more than 4 per cent., or fully $2\frac{1}{2}$ million acres. Barley, 1,967,510 acres last year, appears to occupy much the same area. Oats, 16,831,600 acres last year, have increased about 7 per cent. No information has

been received as to the acreage of rye this year; in 1881 the breadth was 1,789,100 acres. The returns of the yield of these crops have not yet been received, but the reports issued by the Department of Agriculture at Washington, state both the winter and spring wheat crops to be more favourable than for several years past. The yield of wheat in 1881 was 380,280,090 bushels, or 10·1 bushels per acre. It is thought probable that the yield for the present year is about 520 million bushels, or an average of nearly 14 bushels per acre. The yield of maize last year was 1,194,916,000 bushels, or 18·6 bushels per acre. The condition of the crop in August was higher than at the corresponding date in 1881, and it is anticipated that a larger yield will be secured. The yields of other crops in 1881 were as follows:—barley 41,161,330 bushels, or 20·9 bushels per acre; oats 416,481,000 bushels, or 24·7 bushels per acre; rye 20,704,950 bushels, or 11·6 bushels per acre; the Department of Agriculture states that the above cereal estimates for 1881 show a more general reduction in yield than for many years past, and that there has been a corresponding reduction in the surplus stock of corn and wheat held in hand. The latest returns which have been received with regard to live stock in the United States are those for December, 1880, viz., horses 11,429,626; mules 1,720,731; cattle 33,306,355; sheep 43,576,899; pigs 36,247,603. Since then there has doubtless been a considerable falling off in the number of pigs, caused by disease and the inferior corn crop of last year, and the exports of bacon and pork as well as other animal produce have decreased materially during the past year."

APPENDIX.

TABLE A.—*Total Area and Acreage under each kind of Crop, Bare Fallow, and Grass; and 4th June*, 1881, *in each Division of Great Britain, with similar*

	England.		Wales.		Scotland.	
	1882.]	1881.	1882.	1881.	1882.	1881.
	TOTAL AREA AND ACREAGE UNDER CORN CROPS,					
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Total area	32,597,	32,597,	4,722,	4,722,	19,467,	19,467,
„ acreage under crops, bare fallow, and grass	24,736,	24,664,	2,793,	2,785,	4,784,	4,763,
Corn Crops—						
Wheat	2,829,	2,641,	95,	90,	79,	75,
Barley or bere	1,858,	2,030,	136,	142,	262,	270,
Oats	1,533,	1,627,	251,	243,	1,049,	1,031,
Rye	47,	32,	2,	2,	8,	7,
Beans	409,	418,	3,	3,	25,	20,
Peas	243,	213,	2,	2,	2,	2,
Total of corn crops	6,919,	6,961,	489,	482,	1,425,	1,405,
Green Crops—						
Potatoes	332,	348,	42,	43,	167,	189,
Turnips and swedes	1,463,	1,479,	68,	66,	494,	491,
Mangold	326,	339,	6,	7,	2,	2,
Carrots	12,	14,	—	1,	1,	1,
Cabbage, kohl-rabi, and rape	143,	138,	1,	1,	5,	4,
Vetches and other green crops, except clover or grass	389,	364,	7,	7,	18,	17,
Total of green crops	2,665,	2,682,	124,	125,	687,	704,
Clover, sanfoin, and grasses under rotation	2,546,	2,549,	314,	331,	1,467,	1,462,
Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)	11,801,	11,656,	1,837,	1,815,	1,184,	1,172,
Flax	5,	6,	—	—	—	—
Hops	66,	65,	—	—	—	—
Bare fallow or uncropped arable land	735,	745,	29,	31,	21,	20,
	NUMBER OF LIVE STOCK, AS RETURNED UPON					
Horses (including ponies), as returned by occupiers of land—						
Used solely for purpose of agriculture, &c.	772,	772,	73,	72,	144,	143,
Unbroken horses and mares kept solely for breeding	312,	322,	65,	66,	47,	50,
Total of horses	1,084,	1,094,	138,	138,	191,	193,
Cattle—						
Cows and heifers in milk or in calf	1,618,	1,621,	266,	260,	390,	388,
Other cattle—						
2 years of age and above	1,027,	1,103,	117,	133,	252,	270,
Under 2 years of age	1,437,	1,436,	268,	262,	439,	438,
Total of cattle	4,082,	4,160,	645,	655,	1,081,	1,096,
Sheep—						
1 year old and above	9,313,	9,819,	1,745,	1,771,	4,516,	4,553,
Under 1 year old	5,635,	5,564,	773,	696,	2,338,	2,178,
Total of sheep	14,948,	15,383,	2,518,	2,467,	6,854,	6,731,
Pigs	2,123,	1,733,	234,	192,	154,	123,

* From Returns prepared by the Registrar-General for Ireland, and laid before Parliament.

APPENDIX.

and Number of Horses, Cattle, Sheep, and Pigs, as returned upon the 5th June, 1882, *Particulars for Ireland,* and with Total for United Kingdom.* [000's omitted.]

Great Britain.		Ireland.		United Kingdom, including Isle of Man and Channel Islands.		
1882.	1881.	1882.	1881.	1882.	1881.	
Green Crops, Bare Fallow, Grass, &c.						
Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
56,786,	56,786,	20,820,	20,820,	77,800,	77,800,	Total area
32,313,	32,212,	15,212,	15,304,	47,655,	47,646,	„ acreage under crops, bare fallow, and grass
						Corn Crops—
3,004,	2,806,	153,	154,	3,164,	2,967,	Wheat
2,255,	2,442,	188,	211,	2,452,	2,663,	Barley or bere
2,834,	2,901,	1,397,	1,392,	4,245,	4,307,	Oats
56,	42,	8,	8,	64,	49,	Rye
437,	440,	10,	11,	447,	451,	Beans
247,	217,	1,	1,	248,	218,	Peas
8,833,	8,848,	1,757,	1,777,	10,620,	10,655,	Total of corn crops
						Green Crops—
541,	579,	838,	854,	1,388,	1,443,	Potatoes
2,024,	2,036,	294,	295,	2,329,	2,341,	Turnips and swedes
334,	349,	†36,	†45,	371,	395,	Mangold
14,	16,	‡3,	‡4,	17,	20,	Carrots
150,	143,	43,	35,	193,	178,	Cabbage, kohl-rabi, and rape
413,	388,	35,	36,	450,	426,	Vetches and other green crops, except clover or grass
3,476,	3,511,	1,249,	1,269,	4,748,	4,803,	Total of green crops
4,327,	4,342,	1,962,	1,998,	6,333,	6,384,	Clover, sanfoin, and grasses under rotation
14,822,	14,643,	10,110,	10,092,	24,963,	24,768,	Permanent pasture or grass not broken up in rotation (exclusive of heath or mountain land)
5,	7,	114,	147,	119,	154,	Flax
66,	65,	—	—	66,	65,	Hops
784,	796,	21,	21,	806,	818,	Bare fallow or uncropped arable land
the 5th June, 1882, and 4th June, 1881.						
						Horses (including ponies), as returned by occupiers of land—
989,	987,	482,	489,	1,905,	1,924,	Used solely for purpose of agriculture, &c.
425,	438,					Unbroken horses and mares kept solely for breeding
1,414,	1,425,	482,	489,	1,905,	1,924,	Total of horses
						Cattle—
2,267,	2,270,	1,399,	1,390,	3,682,	3,677,	Cows and heifers in milk or in calf
						Other cattle—
1,396,	1,506,	876,	901,	2,277,	2,412,	2 years of age and above
2,144,	2,136,	1,712,	1,663,	3,873,	3,816,	Under 2 years of age
5,807,	5,912,	3,987,	3,954,	9,832,	9,905,	Total of cattle
						Sheep—
15,574,	16,143,	1,934,	2,099,	17,539,	18,274,	1 year old and above
8,746,	8,438,	1,137,	1,160,	9,909,	9,622,	Under 1 year old
24,320,	24,581,	3,071,	3,259,	27,448,	27,896,	Total of sheep
2,510,	2,048,	1,430,	1,088,	3,956,	3,149,	Pigs

† Including beet root. ‡ Including parsnips.

TABLE B.—*Percentage of Total Cultivated Acreage under Various Kinds of Crops, and and Number of each Kind of Live Stock to every* 100 *Acres*

	England.		Wales.		Scotland.	
	1882.	1881.	1882.	1881.	1882.	1881.
	PERCENTAGE OF TOTAL CULTIVATED ACREAGE					
Corn crops (including beans and peas)	28·0	28·2	17·5	17·3	29·8	29·5
Green crops	10·8	10·9	4·5	4·5	14·4	14·8
Bare fallow	2·9	3·0	1·0	1·1	0·4	0·4
Grass—						
Clover, &c., under rotation	10·3	10·3	11·2	11·9	30·7	30·7
Permanent pasture	47·7	47·3	65·8	65·2	24·7	24·6
Other crops	0·3	0·3	0·0	0·0	0·0	0·0
Total	100·0	100·0	100·0	100·0	100·0	100·0
	PERCENTAGE OF TOTAL ACREAGE OF CORN CROPS					
Wheat	40·9	37·9	19·5	18·7	5·6	5·3
Barley or bere	26·8	29·1	27·7	29·5	18·4	19·3
Oats	22·2	23·4	51·3	50·5	73·6	73·4
Rye	0·7	0·5	0·4	0·4	0·6	0·5
Beans	5·9	6·0	0·6	0·5	1·7	1·4
Peas	3·5	3·1	0·5	0·4	0·1	0·1
Total	100·0	100·0	100·0	100·0	100·0	100·0
	PERCENTAGE OF TOTAL ACREAGE OF GREEN CROPS					
Potatoes	12·5	13·0	33·5	34·1	24·3	26·9
Turnips and swedes	54·9	55·1	54·4	53·3	71·9	69·7
Mangold	12·2	12·7	5·3	5·9	0·2	0·3
Carrots	0·4	0·5	0·3	0·3	0·2	0·2
Cabbages, kohl-rabi, and rape	5·4	5·1	1·0	0·9	0·8	0·5
Vetches, lucerne, and any other green crop, except clover or grass	14·6	13·6	5·5	5·5	2·6	2·4
Total	100·0	100·0	100·0	100·0	100·0	100·0
	NUMBER OF EACH KIND OF LIVE STOCK TO EVERY					
Horses	4·4	4·4	4·9	4·9	4·0	4·1
Cattle	16·5	16·9	23·1	23·5	22·6	23·0
Sheep	60·4	62·4	90·1	88·6	143·3	141·3
Pigs	8·6	7·0	8·4	6·9	3·2	2·6

of the Acreage of Corn and Green Crops under the several Descriptions of such Crops, under Cultivation, in each of the Years 1882 *and* 1881.

Great Britain.		Ireland.		United Kingdom, including Isle of Man and Channel Islands.		
1882.	1881.	1882.	1881.	1882.	1881.	
UNDER VARIOUS KINDS OF CROPS IN EACH YEAR.						
27·3	27·5	11·6	11·6	22·3	22·4	Corn crops (including beans and peas)
10·8	10·9	8·2	8·3	9·9	10·1	Green crops
2·4	2·5	0·1	0·1	1·7	1·7	Bare fallow
						Grass—
13·4	13·5	12·9	13·1	13·4	13·4	Clover, &c., under rotation
45·9	45·4	66·5	65·9	52·4	52·0	Permanent pasture
0·2	0·2	0·7	1·0	0·4	0·4	Other crops
100·0	100·0	100·0	100·0	100·0	100·0	Total
UNDER EACH KIND OF CORN CROP IN EACH YEAR.						
34·0	31·7	8·7	8·7	29·8	27·9	Wheat
25·5	27·6	10·7	11·9	23·1	25·0	Barley or bere
32·1	32·8	79·5	78·4	40·0	40·4	Oats
0·6	0·5	0·4	0·4	0·6	0·5	Rye
5·0	5·0	0·6	0·6	4·2	4·2	Beans
2·8	2·4	0·1	0·0	2·3	2·0	Peas
100·0	100·0	100·0	100·0	100·0	100·0	Total
UNDER EACH KIND OF GREEN CROP IN EACH YEAR.						
15·6	16·5	67·1	67·3	29·2	30·1	Potatoes
58·2	58·0	23·5	23·3	49·0	48·7	Turnips and swedes
9·6	9·9	2·9	3·5	7·8	8·2	Mangold
0·4	0·4	0·3	0·3	0·4	0·4	Carrots
4·3	4·1	3·4	2·7	4·1	3·7	Cabbages, kohl-rabi, and rape
11·9	11·1	2·8	2·9	9·5	8·9	Vetches, lucerne, and any other green crop, except clover or grass
100·0	100·0	100·0	100·0	100·0	100·0	Total
100 ACRES UNDER CROPS, FALLOW AND GRASS.						
4·4	4·4	3·2	3·2	4·0	4·0	Horses
18·0	18·4	26·2	25·8	20·6	20·8	Cattle
75·3	76·3	20·2	21·3	57·6	58·6	Sheep
7·8	6·4	9·4	7·1	8·3	6·6	Pigs

TABLE C.—*Total Acreage under Crops, Bare Fallow, and Grass; and Acreage under Corn Land), in England, Wales, and Scotland*

	1873.	1874.	1875.	1876.	1877.
Total Acreage under—					
Crops, Bare Fallow, and Grass—	Acres.	Acres.	Acres.	Acres.	Acres.
England	23,893,558	24,008,368	24,112,309	24,201,622	24,312,033
Wales	2,647,080	2,678,730	2,696,143	2,712,097	2,731,159
Scotland	4,561,982	4,579,821	4,607,898	4,637,893	4,669,221
Total	31,102,620	31,266,919	31,416,350	31,551,612	31,712,413
Corn Crops—					
England	7,501,713	7,505,076	7,528,543	7,288,186	7,302,772
Wales	536,786	516,001	512,178	498,968	494,678
Scotland	1,420,429	1,410,413	1,410,929	1,407,515	1,412,679
Total	9,458,928	9,431,490	9,451,650	9,194,669	9,210,129
Green Crops—					
England	2,749,318	2,764,182	2,848,473	2,752,434	2,759,174
Wales	133,232	131,956	131,085	129,466	129,535
Scotland	693,936	685,132	684,549	689,974	696,137
Total	3,576,486	3,581,270	3,664,107	3,571,874	3,584,846
Clover, &c.—					
England	2,678,311	2,618,655	2,608,106	2,787,103	2,737,387
Wales	360,555	365,078	360,596	360,159	351,797
Scotland	1,327,952	1,357,009	1,385,369	1,393,011	1,405,032
Total	4,366,818	4,340,742	4,354,071	4,540,273	4,494,216
Total Acreage of—					
Arable Land—					
England	13,655,744	13,570,219	13,576,026	13,512,993	13,454,017
Wales	1,065,495	1,045,188	1,029,830	1,014,151	998,876
Scotland	3,465,452	3,473,500	3,497,873	3,508,524	3,531,165
Total	18,186,691	18,088,907	18,103,729	18,035,668	17,984,058
Permanent Pasture—					
England	10,237,814	10,438,149	10,536,283	10,688,629	10,858,016
Wales	1,581,585	1,633,542	1,666,313	1,697,946	1,732,283
Scotland	1,096,530	1,106,321	1,110,025	1,129,369	1,138,056
Total	12,915,929	13,178,012	13,312,621	13,515,944	13,728,355

Crops, Green Crops, Clover, &c., and Permanent Pasture (exclusive of Heath and Mountain in each Year from 1873 *to* 1882 *inclusive.*

1878.	1879.	1880.	1881.	1882.	
					Total Acreage under—
Acres.	Acres.	Acres.	Acres.	Acres.	Crops, Bare Fallow, and Grass—
24,417,815	24,503,882	24,596,266	24,663,937	24,736,192	England
2,746,511	2,758,743	2,767,516	2,784,963	2,793,346	Wales
4,690,206	4,713,159	4,738,127	4,762,612	4,783,833	Scotland
31,854,532	31,975,784	32,101,909	32,211,512	32,313,371	Total
					Corn Crops—
7,274,811	7,113,122	6,993,699	6,960,958	6,919,320	England
491,868	481,577	478,116	482,315	488,890	Wales
1,400,967	1,390,535	1,403,887	1,404,703	1,425,170	Scotland
9,167,646	8,985,234	8,875,702	8,847,976	8,833,380	Total
					Green Crops—
2,680,983	2,736,488	2,659,134	2,681,953	2,664,522	England
122,708	126,951	120,073	124,550	124,447	Wales
687,319	690,879	697,446	704,065	686,691	Scotland
3,491,010	3,554,318	3,476,653	3,510,568	3,475,660	Total
					Clover, &c.—
2,785,097	2,674,949	2,646,241	2,548,952	2,546,272	England
356,486	347,473	332,353	331,401	314,204	Wales
1,431,524	1,450,951	1,455,745	1,461,932	1,466,916	Scotland
4,573,107	4,473,373	4,434,339	4,342,285	4,327,392	Total
					Total Acreage of—
					Arable Land—
13,408,235	13,270,356	13,134,410	13,008,112	12,935,464	England
998,310	984,932	961,766	969,550	956,289	Wales
3,536,691	3,553,772	3,578,774	3,590,453	3,599,943	Scotland
17,943,236	17,809,060	17,674,950	17,568,115	17,491,696	Total
					Permanent Pasture—
11,009,580	11,233,526	11,461,856	11,655,825	11,800,728	England
1,748,201	1,773,811	1,805,750	1,815,413	1,837,057	Wales
1,153,515	1,159,387	1,159,353	1,172,159	1,183,890	Scotland
13,911,296	14,166,724	14,426,959	14,643,397	14,821,675	Total

TABLE D.—*Summary of Total Acreage under each Principal Crop, and of the Number*

		1873.	1874.	1875.	1876.	1877.
Principal Crops.		Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	England	3,252,802	3,391,440	3,128,547	2,823,342	2,987,129
	Wales	116,852	117,869	111,797	94,423	100,226
	Scotland	120,726	120,991	102,137	78,192	81,185
	Great Britain	3,490,380	3,630,300	3,342,481	2,995,957	3,168,540
Barley or Bere	England	1,926,183	1,889,722	2,090,423	2,109,265	2,000,531
	Wales	163,613	152,425	154,444	153,647	147,212
	Scotland	246,117	245,840	264,834	270,197	269,845
	Great Britain	2,335,913	2,287,987	2,509,701	2,533,109	2,417,588
Oats	England	1,419,128	1,356,739	1,421,951	1,534,249	1,489,999
	Wales	244,893	235,621	237,170	242,417	239,298
	Scotland	1,012,206	1,004,024	1,004,888	1,021,764	1,024,882
	Great Britain	2,676,227	2,596,384	2,664,009	2,798,430	2,754,179
Potatoes	England	309,419	314,571	320,477	305,429	303,964
	Wales	44,936	45,379	44,505	42,581	42,942
	Scotland	160,327	160,480	157,671	154,709	165,565
	Great Britain	514,682	520,430	522,653	502,719	512,471
Turnips and Swedes	England	1,540,307	1,560,857	1,569,049	1,561,116	1,495,885
	Wales	70,821	70,843	70,326	72,049	70,813
	Scotland	510,780	501,636	503,323	512,408	506,757
	Great Britain	2,121,908	2,133,336	2,142,698	2,145,573	2,073,455
Clover, &c., under Rotation	England	2,678,311	2,618,655	2,608,106	2,787,103	2,737,387
	Wales	360,555	365,078	360,596	360,159	351,797
	Scotland	1,327,952	1,357,009	1,385,369	1,393,011	1,405,032
	Great Britain	4,366,818	4,340,742	4,354,071	4,540,273	4,494,216
Live Stock.		No.	No.	No.	No.	No.
Cattle	England	4,173,635	4,305,440	4,218,470	4,076,410	3,979,650
	Wales	642,857	665,105	651,274	636,644	616,209
	Scotland	1,148,057	1,154,846	1,143,080	1,131,087	1,102,074
	Great Britain	5,964,549	6,125,491	6,012,824	5,844,141	5,697,933
Sheep	England	19,169,851	19,859,758	19,114,634	18,320,091	18,330,377
	Wales	2,966,862	3,064,696	2,951,810	2,873,141	2,862,013
	Scotland	7,290,922	7,389,487	7,100,994	6,989,719	6,968,774
	Great Britain	29,427,635	30,313,941	29,167,438	28,182,951	28,161,164
Pigs*	England	2,141,417	2,058,781	1,875,357	1,924,033	2,114,751
	Wales	211,174	213,754	203,348	215,488	230,720
	Scotland	147,668	150,297	151,213	154,099	153,257
	Great Britain	2,500,259	2,422,832	2,229,918	2,293,620	2,498,728

* Exclusive of those kept in towns and by

of Live Stock returned in Great Britain, in each Year from 1873 *to* 1882 *inclusive.*

1878.	1879.	1880.	1881.	1882.		
Acres.	Acres.	Acres.	Acres.	Acres.	*Principal Crops.*	
3,041,241	2,718,992	2,745,733	2,641,045	2,829,491	England	Wheat
101,813	94,639	89,729	90,026	95,387	Wales	
75,363	76,613	73,976	74,738	79,082	Scotland	
3,218,417	2,890,244	2,909,438	2,805,809	3,003,960	Great Britain	
2,062,498	2,236,101	2,060,807	2,029,499	1,857,542	England	Barley or Bere
148,116	152,491	142,514	142,318	135,493	Wales	
259,038	278,584	264,120	270,517	262,234	Scotland	
2,469,652	2,667,176	2,467,441	2,442,334	2,255,269	Great Britain	
1,430,376	1,425,126	1,520,125	1,627,004	1,533,452	England	Oats
234,986	226,967	239,526	243,544	251,033	Wales	
1,033,545	1,004,535	1,037,254	1,030,727	1,049,380	Scotland	
2,698,907	2,656,628	2,796,905	2,901,275	2,833,865	Great Britain	
301,852	323,992	324,931	347,733	332,243	England	Potatoes
40,816	42,609	38,940	42,440	41,674	Wales	
165,763	174,743	187,061	189,161	167,147	Scotland	
508,431	541,344	550,932	579,334	541,064	Great Britian	
1,466,973	1,457,762	1,473,030	1,478,682	1,462,824	England	Turnips and Swedes
67,531	67,349	65,190	*66,356	67,695	Wales	
497,356	491,964	485,987	490,604	493,807	Scotland	
2,031,860	2,017,075	2,024,207	2,035,642	2,024,326	Great Britain	
2,785,097	2,674,949	2,646,241	2,548,952	2,545,272	England	Clover, &c., under Rotation
356,486	347,473	332,353	331,401	314,204	Wales	
1,431,524	1,450,951	1,455,745	1,461,932	1,466,916	Scotland	
4,573,107	4,473,373	4,434,339	4,342,285	4,327,392	Great Britain	
No.	No.	No.	No.	No.	*Live Stock.*	
4,034,552	4,128,940	4,158,046	4,160,085	4,081,735	England	Cattle
608,189	643,815	654,714	655,345	644,510	Wales	
1,095,387	1,083,601	1,099,286	1,096,212	1,081,246	Scotland	
5,738,128	5,856,356	5,912,046	5,911,642	5,807,491	Great Britain	
18,444,004	18,445,522	16,828,646	15,382,856	14,947,994	England	Sheep
2,925,806	2,873,460	2,718,316	2,466,945	2,517,914	Wales	
7,036,396	6,838,098	7,072,088	6,731,252	6,853,860	Scotland	
28,406,206	28,157,080	26,619,050	24,581,053	24,319,768	Great Britain	
2,124,722	1,771,081	1,697,914	1,733,280	2,122,625	England	Pigs*
218,337	192,757	182,003	191,792	233,694	Wales	
140,189	127,721	120,925	123,018	154,083	Scotland	
2,483,248	2,091,559	2,000,842	2,048,090	2,510,402	Great Britain	

cottagers with less than a quarter of an acre of land.

TABLE E.—*Quantities and Values of Manures Imported into the United Kingdom in each of the Years from* 1861 *to* 1881 *inclusive.*

Year.	Quantities.				Values.			
	Bones of Animals and Fish for Manure only.	Guano.	Unenumerated.	Total.	Bones of Animals and Fish for Manure only.	Guano.	Unenumerated.	Total.
	Tons.	Tons.	Tons.	Tons.	£	£	£	£
1861....	58,280	178,423	3,155	239,858	280,361	2,022,283	11,926	2,314,570
'62....	59,592	141,636	4,340	205,568	316,210	1,635,322	14,323	1,965,855
'63....	65,404	233,574	7,020	305,998	348,425	2,658,856	21,977	3,029,258
'64....	60,828	131,358	8,692	200,878	345,369	1,457,088	78,289	1,880,746
'65....	65,642	237,393	9,590	312,625	362,624	2,675,995	52,279	3,090,898
'66....	72,878	135,697	8,433	217,008	356,853	1,439,679	34,509	1,831,041
'67....	73,262	192,308	5,570	271,140	368,981	2,109,506	18,912	2,497,399
'68....	70,546	182,343	6,474	259,363	381,618	2,039,478	15,822	2,436,918
69 ...	90,604	210,010	8,624	309,238	546,645	2,640,983	22,704	3,210,332
'70....	92,032	280,311	24,761	397,104	591,701	3,476,680	77,457	4,145,838
'71....	92,878	178,808	80,264	351,950	596,266	1,986,989	276,949	2,860,204
'72....	97,644	118,704	131,936	348,284	642,813	1,201,042	420,739	2,264,594
'73....	70,055	184,420	92,420	346,895	457,432	2,103,531	297,675	2,858,638
'74....	83,443	112,429	139,728	335,600	549,125	1,348,849	394,441	2,292,415
'75....	97,217	114,454	190,889	402,560	630,656	1,293,436	499,213	2,423,305
'76....	85,129	199,291	204,707	489,127	524,769	2,295,744	543,165	3,363,678
'77....	104,740	152,989	225,273	483,002	666,555	1,665,127	661,670	2,993,352
'78....	86,620	177,793	252,593	517,006	542,386	1,806,573	760,227	3,109,186
'79....	64,238	77,015	215,344	356,597	365,772	704,448	641,457	1,711,677
'80....	78,138	80,497	192,040	350,675	436,186	810,177	537,279	1,783,642
'81....	65,180	50,505	262,109	377,794	382,316	491,327	692,158	1,565,801

TABLE F.—*Population* of the United Kingdom and Value of Imports of Live Stock, Corn and Grain, and various Kinds of Dead Meat and Provisions† in each of the Years* 1862 *to* 1881, *and Proportion per Head of Population.*

Years.	Population* of the United Kingdom, Estimated at the middle of each Year.	Imports.				Value per Head of Population.
		Live Cattle, Sheep, and Pigs.	Corn, Grain, and Flour.	Dead Meat and Provisions.†	Total.	
	No.	£	£	£	£	£ *s.* *d.*
1862....	29,255,015	1,888,236	37,774,148	10,630,734	50,293,118	1 14 5
'63....	29,433,918	2,655,072	25,956,520	10,841,324	39,452,916	1 6 10
'64....	29,628,578	4,275,322	19,882,181	12,157,010	36,314,513	1 4 6
'65....	29,861,908	6,548,413	20,725,483	12,667,838	39,941,734	1 6 9
'66....	30,076,812	5,839,058	30,049,655	13,483,715	49,372,428	1 12 10
'67....	30,334,999	4,148,382	41,368,349	12,489,331	58,006,062	1 18 3
'68....	30,617,718	2,698,496	39,432,624	13,277,683	55,408,803	1 16 2
'69....	30,913,513	5,299,087	37,351,089	15,189,933	57,840,109	1 17 5
'70....	31,205,444	4,654,905	34,170,221	14,773,712	53,598,838	1 14 4
'71....	31,513,442	5,663,150	42,691,464	16,593,668	64,948,282	2 1 3
'72....	31,835,757	4,394,850	51,228,816	18,604,273	74,227,939	2 6 8
'73....	32,124,598	5,418,584	51,737,811	23,854,967	81,011,362	2 10 5
'74....	32,426,369	5,265,041	51,070,202	25,224,958	81,560,201	2 10 4
'75....	32,749,167	7,326,288	53,086,691	25,880,806	86,293,785	2 12 8
'76....	33,093,439	7,260,119	51,812,438	29,851,647	88,924,204	2 13 9
'77....	33,446,930	6,012,564	63,536,322	30,144,013	99,692,899	2 19 7
'78....	33,799,386	7,453,309	59,064,875	32,636,877	99,155,061	2 18 8
'79....	34,155,126	7,075,386	61,261,437	32,835,911	101,172,734	2 19 3
'80....	34,468,552	10,239,295	62,857,269	38,744,593	111,841,157	3 4 11
'81....	34,929,679	8,525,256	60,856,768	35,760,286	105,142,310	3 – 2

* Exclusive of the army, navy, and merchant seamen abroad.

† Beef, meat salted or fresh, meat preserved otherwise than by salting, pork, bacon, and hams, butter, cheese, eggs, and potatoes.

II.—*The Organisation of Government Statistical Offices.*

The following is a translation of a report by M. Cheysson, Director of the Ministry of Public Works and Vice-President of the Paris Statistical Society, on the proposed establishment of a Superior Statistical Council in France. (*Journal de la Société de Statistique de Paris*, September, 1882):—

"At a general meeting of the Paris Statistical Society, held on the 28th June, it was resolved that a Select Committee, composed of those who had filled the office of Vice-President of the Society, the members of the Council, and several distinguished economists and statisticians, under the presidency of M. Daniel Wilson, should be appointed to enquire into the expediency of establishing a Statistical Central Commission in France, and to consider the measures which should be adopted for the revival of the long interrupted International Statistical Congresses.

"The Committee have held several meetings, and although they have as yet far from completed their labours, more especially in connection with the second question under consideration, they are of opinion that a preliminary report, showing what has been the result of their investigations up to the present, would not prove uninteresting.

"In conformity with their directions, I have now the honour to submit that, in view of the many difficulties attending their efforts to effect a resumption of the interrupted International Statistical Congresses, a result only to be obtained by means of negotiations requiring more time than has hitherto been at their disposal, the Committee have decided for the present to allow this matter to remain in abeyance, and to devote themselves to the consideration of the first question, namely, the practicability of establishing a Central Statistical Commission in France.

"In order to be in a position to advise on the subject of statistical reorganisation, the Committee considered it desirable that an enquiry should first be made into the systems pursued in both France and elsewhere, in the compilation and publication of official statistics generally, and with this object, communications have been addressed to the heads of the various statistical bureaux requesting them to supply as much information as possible respecting the methods pursued in their respective countries. The result has been so far successful, that with but few exceptions replies have been received from the persons referred to, describing in great detail the methods employed by them in preparing and publishing their official statistics, specifying the departments by which controlled, and furnishing a variety of other interesting data respecting the formation and composition of each bureau. As this information is contained for the most part in very voluminous reports, which it is not necessary to reproduce *in extenso*, I will endeavour to summarise their contents as briefly as possible.

Belgium.

"In Belgium the establishment of a Central Statistical Office dates from the year 1841, and was decided upon at the suggestion of M. Liedts, who was then Minister of the Interior. He drew the attention of the Belgian Government to the evils arising from the absence of centralisation and harmony in the official statistics, and pointed out that 'while some departments appeared to issue most excellent publications, by others the value and importance of statistics seemed to be entirely ignored; others, again, by reason of their independent action, each working from the same data, caused many divergences to appear in their returns, unnecessary duplication in the work, and a vast amount of needless expenditure.' He insisted upon the absolute necessity of a central directing office, and it was in consequence of his recommendations, that a Central Statistical Commission was appointed by the laws of the 26th March and 20th October, 1841. This Commission is attached to the Ministry of the Interior, and is composed of seventeen members—chiefly scientific men and heads of administrative departments. Its initiation was due to the celebrated statistician Quetelet, who for many years directed its labours and shed a lustre over its work. There also exist in Belgium a Central Bureau of Statistics, over which Quetelet also presided, and several Provincial Statistical Commissions, whose members, generally chosen from among the most celebrated literary and scientific men and the principal local authorities, are appointed by the Minister of the Interior on the recommendation of the central commission.

Italy.

"Italy, until very recently, had a Central Statistical Commission, which was established by the law of the 25th February, 1872, since modified by the laws of the 16th November, 1873, and the 10th February, 1878. A decree, however, of the 18th February, 1882, substituted a Superior Statistical Council and a Permanent Commission for this Central Statistical Commission. The Council, which is attached to the Ministry of Agriculture and Commerce, consists of twenty-four members, made up as follows:—twelve literary or scientific men, the General Secretary of the Department of Agriculture, Industry, and Commerce, the Directors of the Bureau of Agriculture and Trade, the Director of the Bureau for General Statistics, and eight subordinate officials—one from each of the ministries. The Permanent Commission is composed of five of the members of the Superior Council, under the presidency of the Director of the Bureau for General Statistics, and forms part of the actual Ministry of Agriculture. It undertakes the preparation and publication of all administrative statistics, with the exception of the following:—

"Those relating to foreign trade, which are published annually by the Customs Department.

"Those relating to recruiting and the strength of the land forces, published by the Ministry of War.

"Prisons and houses of correction, by the Ministry of the Interior.

" Postal, telegraphic, railway statistics, and those of the State, district and parish roads, controlled by the Ministry of Public Works.

" The direction of all other statistics is in the hands of the General Bureau of Statistics, whose duties have of late been largely augmented by the additional labour entailed in the collection and preparation of returns relating to civil and criminal justice, these branches having, in consequence of a report drawn up by M. Zanardelli, Minister of Justice, been recently reorganised and transferred to the General Bureau of Statistics. The expenditure incurred in the working of this office is exceeding heavy, as it appears from the budget of 1882, that a sum of 123,000 francs was voted for the salaries of its extra 'non-established' clerks, 100,000 francs to defray the expenses of the publications, which are very numerous and are largely distributed, and a further sum of 600,000 francs for the expenses in connection with the compilation of the census returns. Finally, each province has its own Provincial Statistical Commission, established by the law of the 9th October, 1861, and each district its District Commission, created by the law of 3rd July, 1862.

Prussia.

" The system pursued in Prussia is very similar to that established in Italy, there is a Central Commission (*Commission Centrale Supérieure*), and also a Royal Bureau of Statistics. The creation of the former dates from the year 1860, and its composition is as follows: the Minister of the Interior, who is President of the Commission, a representative of each of the ministries and of the Imperial Chancellery, the director and one of the members of the Bureau of Statistics, three members chosen by each of the two Chambers, and one or two members taken from among the most celebrated literary men, university professors, or others who have acquired special knowledge in statistical science. The duties undertaken by this commission are defined as follows, in the report which was mainly instrumental in obtaining its appointment:—'To concentrate all statistical work under one direction, to consider any reforms which might be introduced in the system hitherto pursued of collecting and publishing returns with the object of simplifying and condensing existing publications and harmonising different sets of statistics; to determine what information it is desirable to publish, the method of its collection and preparation, and in fine, to exercise a supervising authority over official statistics in general.' As regards the Royal Bureau of Statistics, it was established by the law of the 28th May, 1805, in much the same form as it exists at the present day. It is an office of great antiquity and importance, and has numbered among its chiefs the following eminent statisticians:—Hoffman, Dieterici, and Engel. Its staff consisted in 1871 of a director, five assessors, and twelve *employés*, but of late years, consequent upon a considerable expansion of its labours, this staff has been largely augmented. The sum voted for this department in 1872 amounted to 128,812 francs, exclusive of the grant for the Meteorological Institute, which is

amalgamated with it, amounting to 47,500 francs. The salary of the director is 13,725 francs per annum, and the *employés* are paid at the rate of from 2,250 to 5,250 francs each. The business of the Royal Bureau of Statistics is carried on in a separate building, devoted exclusively to its uses. In 1869 considerable additions and alterations were made in it, and at the present time it forms a large and imposing edifice. It contains an excellent library, where the sale of official publications issued by the bureau are supplied to the general public, and to booksellers both at home and abroad.

"In order that the work of this office, which is looked upon as one of the most important departments of the State, might be well and efficiently performed, the Prussian authorities considered it indispensable that its clerical staff should consist of men whose qualifications were of a much higher order than those generally to be found in the ordinary government *employé*, and as it appeared to them that these necessary qualifications could only be attained by long and patient application to a special course of study, it was determined to establish a *Statistisches Seminar* or school of statistics, attached to and forming part of the actual bureau, where instructions could be given under the direction of its chief, assisted by eight professors, whose duties were to deliver lectures on statistical science, and establish regular classes. To provide for the initiation of the student into the practice as well as the theory of statistics, it was resolved that he should be entrusted at first with the elementary work of the office under the immediate supervision of the professors, who are themselves, almost all, attached to the staff of the direction of statistics. The course of instruction comprises the study of political economy, statistics of agriculture, industrial establishments, population, &c. There is always a large number of students regularly attending this school, who on the termination of their studies are generally competent to fulfil any duties in connection with the compilation and preparation of any statistical returns with which they may be entrusted. In order that the system of statistical reform should be perfected, M. Engel resolved that every province, district, and town should be represented, in a statistical point of view, at the central bureau of Berlin.

"The law of 1862, which established relations between the various local authorities and the central bureau, decreed that each municipality should appoint an officer, whose special duty it would be to collect and arrange the official documents, make reports, and publish any information which might appear to them to be of sufficient interest to bring under the notice of the general public. Under the auspices of the different chiefs of the bureau of statistics, considerable additions have from time to time been made to the library, and in the year 1868 those of Kiel, Cassel, Hanover and Frankfort were incorporated with it, and it now consists of more than 50,000 volumes, and in addition, it is supplied with 200 German and foreign newspapers.

Austria.

"There is in Austria a General Direction of Statistics, and also a Central Statistical Commission, established in 1863, on the same

principles as the Belgian commission. Both these offices are attached to the Ministry of Public Instruction and Worship. The Central Commission is not only a consultative, but an administrative body, and its orders are executed by the General Direction of Statistics. It is composed of a president appointed by the Emperor, a representative of each of the central administrations, a director of statistics, and a secretary chosen from among the *employés* of the statistical bureau. It may be further reinforced by the addition of a certain number of men distinguished in any of the branches of science, political economists and statesmen. In addition to these members, the Commission has power to appoint, subject to the approval of the Minister of Instruction and Public Worship, corresponding members who may be required to co-operate in its labours, either personally, or by means of written reports and suggestions.

"When any information on a given subject is required by the Commission, the method of procedure generally is to refer to the member representing the administration in whose province it would lie to deal with that particular question, but it is empowered to communicate directly with all the administrative departments through the Director of Statistics. All correspondence with foreign statistical bureaux, and any business in connection with the exchange of financial and statistical publications is undertaken by the President of the Commission himself. With a view to facilitate the work, the commission is split up into several sub-commissions, each having its own chairman, who is charged with the duty of submitting all the documents prepared by his section to the central commission, who consider and report upon them. Among the numerous publications prepared by it, may be mentioned the *Jahrbuch*, a volume of miscellaneous statistics issued annually; the *Handbüchlein*, chiefly a summary of the *Jahrbuch*—annual tables of trade and industry—and a series of interesting reports, entitled *Mittheilungen aus dem Gebiete der Statistik*, appearing at stated periods, dealing chiefly with questions affecting political economy, finance and statistics. In addition to these works there are many interesting and valuable statistical publications issued by the statistical offices attached to the Ministries of Commerce, Agriculture, and War. These mostly refer to commercial, agricultural, and military matters, and form an important contribution to Austrian statistical literature.

Hungary.

"In Hungary the law of 1874 decreed the appointment of a Central Statistical Commission (*Statistisches Landes-Rath*), a Central Bureau, and a Municipal Committee for each commune, and the duties to be undertaken by each were clearly defined by it. The Central Commission is composed of representatives of the various ministries, with whom are associated certain persons distinguished in literature or science, and others who by their special qualifications are admitted to a seat on its board. It is attached to the Ministry of Agriculture, Commerce, and Industry, and holds its meetings every month under the presidency of the Minister of Agriculture, or of a vice-president appointed by him. The Central Bureau also

forms part of the actual Ministry of Agriculture, and undertakes the preparation of statistics relating to the movement of the population, and reports on the condition of the Empire. It comprises a technical section subdivided into eight groups, and also an administrative and working department, where a large number of statistical publications are prepared and issued, some at regular intervals, and others as occasion requires.

"The Municipal Committee established in each commune, in conformity with the provisions of the Act of 1874, consists of magistrates, certain municipal authorities, and representatives of trade, industry, and the church. There is a friendly exchange of statistical information between this department, the various ministries, and the Central Commission.

Russia.

"In Russia there is a Central Commission belonging to the Ministry of the Interior, and also Provincial Statistical Committees which are under its directions. Independently of the above, there are statistical offices attached to the Ministries of Finance, Agriculture, War, Justice, and of Road and Water Communication; and also a Statistical Council composed of members of the various ministries, which is charged with the duty of bringing together the statistics of the various departments, and of discussing questions relating to the organisation of statistical work.

Spain.

"In Spain the statistical department forms part of the general direction of the Geographical and Statistical Institute, which is attached to the Ministry of Public Instruction, Public Works, Agriculture, Commerce, and Statistics (*Fomento*). By the law of the 1st April, 1873, a Consultative Committee was established, consisting of twenty-one members, chosen from among public functionaries, officers, statesmen, and *savants*, and is divided into two sections—the geographical and the statistical. The duties devolving upon the Committee are to discuss and report upon any questions submitted to its consideration by the direction of the institute; but it takes no part in active administration.

Switzerland.

"The Central Statistical Bureau of Switzerland is under the Ministry of the Interior; it has a director, an examiner, a translator, an accountant, and six or eight auxiliary clerks attached to it, and it undertakes the following branches of statistics:—

"The census of the population.
"Cattle census.
"Landed proprietors.
"Movement of the population.
"Emigration.
"Railways.

"The Helvetian Central Bureau also undertakes the preparation and publication at intervals of other statistical returns as the

government may direct, and is in communication with the various foreign bureaux.

Norway.

" Norway has its Central Bureau; but, instead of the Central Commission, a statistical conference is annually held, at which the heads of departments meet and decide upon the work to be undertaken. All matters relating to the expenses incurred in connection with the publication of official statistics are in the hands of the Central Bureau, the estimates are prepared there for the budget of the Minister of the Interior—the work of issuing the necessary directions to the printers and paper makers, and of the actual distribution of the publications themselves, is undertaken by this bureau—in fact it exercises a supervision over all the departments in which statistical matter is prepared, and virtually constitutes in itself a Central Commission, as it performs, in many respects, the same duties as are usually assigned to that body.

Sweden.

" Sweden can lay claim to the possession of the oldest Central Commission. This was first established in 1756, with the object of concentrating all the data relating to the movement of the population. This commission, which existed for more than a century without modification, has been remodelled and transformed into a *Commission Centrale des Tabelles*, consisting of two divisions, the Central Commission and the Central Bureau. The Central Commission corresponds in every particular with the same institutions in other countries. It is presided over by the Minister of the Interior, and is composed of nine members, four of whom are entitled to seats by reason of their official position, the remainder being representatives of various administrations, by whom they are appointed, subject to the approval of the King. The four members by virtue of their office, are the Director of the Central Bureau, who acts as vice-president, the chief of the Topographical Department of the War Office, the director of the department entrusted with the duties of land surveys, and the secretary of the Royal Agricultural Academy. The delegates are chosen from the Ministry of Justice, the department for trade, the Ministry of Finance, and the Medical Department.

" One cannot fail to be struck with a curious feature in the composition of this body, namely, the introduction of the representatives of topography and land survey. The association of these elements, which is to be found also in the case of the Spanish Geographical and Statistical Institute, and of the consultative committee, appears perfectly natural when one considers the affinity existing between these two branches of science. In addition to the Central Commission, there is in Sweden a Central Bureau of Statistics, as mentioned above. The royal decree establishing this office is dated the 7th November, 1879, and defines clearly and in great detail the duties to be performed by it.

England.

" England is a country in which but little attention is paid to

centralisation, it is therefore not surprising to find a total absence of any central or general supervision over official statistics. Each department appears to have its own statistical bureau attached to it, where the data is collected and worked up under the direction of the head of that particular department at the time being. But though the official publications are issued by departments independently of each other, the form of the volumes themselves does not differ very materially. They are generally either in octavo or quarto form, printed by the same printers, and appear invariably in the blue paper wrappers from which they take their title of 'blue books.' The price of the publication is printed conspicuously on the cover, and is usually very moderate. The cost of octavo volumes containing one hundred and twenty pages averages from eight pence to one shilling, and of the quarto from two shillings to three and sixpence each. They are thus brought within the reach of all. Among the many statistical bureaux attached to the various departments, special mention should be made of that belonging to the Board of Trade, where a mass of interesting and valuable information, embracing almost every description of subject, is regularly collected and compiled. One of the special duties with which this office is entrusted is the consideration of all questions affecting agriculture and trade, and although strictly speaking it cannot be said to be a general or central statistical office, yet to a very great extent it deserves the name. Among other work it collects and publishes the various statistical statements prepared in other departments, under the title of the *Statistical Abstract of the United Kingdom*, an octavo volume containing the most varied and valuable information. Other well known returns which are prepared under the direction of this office, are the *Annual Statement of Trade and Navigation*, the *Statistical Abstract for Foreign Countries*, the *Abstract for the Colonies*, *Miscellaneous Statistics*, a volume issued every three years, *Colonial Statistics*, also issued triennially, and the *Tariff*, *Agricultural, and Railway Returns*, issued annually. This office is also, in accordance with an arrangement entered into at a meeting of the International Statistical Congress, in communication with foreign statistical bureaux, and an interchange of publications is regularly carried on with them.

"The statistical department of the office of the Registrar-General undertakes the work in connection with the decennial census, and the annual and quarterly reports of births, deaths, and marriages, in the United Kingdom.

"Judicial statistics and returns relating to prisons are prepared at the Home Office.

"The Local Government Board publish reports dealing with local taxation, relief of the poor, &c.

"The statistical department of the India Office annually undertakes an abstract of the statistics of British India, and a statement of the moral and material progress and condition of the Empire, together with returns of finance, railways, &c.

"The Colonial Office annually presents to Parliament reports from the Governors of the British Colonies on the condition of their several colonies, usually including a *précis* of the statistics of

the colonial blue books which are regularly received; and finally the Foreign Office also presents to Parliament reports from the Secretaries of Embassy and Legation, and from British Consuls abroad, on the commercial, financial, and economical conditions of their respective countries and districts, reports which contain a large amount of very valuable statistical information.

United States.

" In the United States there is no Statistical Central Commission, each department undertaking the preparation of its own returns. There is a bureau of statistics belonging to the Treasury, in which returns chiefly dealing with finance, trade, shipping, emigration and currency are regularly prepared. Statistical bureaux are also attached to the Agricultural Department and the Education Commission. Statistical subjects are dealt with at the office of the Controller of the Currency, chief among the publications issued from this department being those relating to national banks; also at the department of the Minister of the Interior, at the Post Office, and many other departments.

" The most important of all the American statistical bureaux is that in which the decennial census returns are prepared.

" In addition to the official publications annually issued by these bureaux, there are many unofficial statistical works which appear from time to time, and contain a variety of valuable information, one in particular calls for special mention, as it is an authority on railway matters, namely, *Poor's Railway Manual.*

France.

" In France the decentralisation of technical statistical activity is even more marked than in either England or the United States, each department performing its own statistical work, and publishing independent returns. The following is a list of the offices specially devoted to the collection and preparation of statistical matter, and the names of the administrations to which attached :—

" Ministry of Public Works: (1) *Bureau de la Statistique des Chemins de Fer;* (2) *Bureau de la Statistique graphique.*

,, Justice: *Bureau de la Statistique judiciare.*

,, Finance: (1) *Bureau de Statistique et de Legislation comparée;* (2) *Bureau des Archives commerciales.*

,, the Interior: *Service de la Carte de France et de la Statistique graphique.*

,, Public Instruction: *Bureau de Statistique et de Pedagogie.*

,, Commerce: *Bureau de la Statistique.*

,, Agriculture: *Bureau de la Statistique Agricole.*

,, Posts and Telegraphs: *Bureau de la Statistique et de l'enseignement.*

" In addition to the bureaux mentioned above, which are almost exclusively devoted to the collection and preparation of statistical data, there are a number of others in which, although the study of

statistics is not made a special feature, the publication of a considerable number of miscellaneous statistical works is undertaken, the chief among them being those relating to communal organisation, prisons, transportation, sea fisheries, charitable institutions, parish highways, &c. Space would not permit of a detailed list of the many valuable statistical volumes, which although prepared and published in offices not strictly statistical, yet deal with purely statistical matter, and appear under official authority.

"It will be observed from the foregoing survey of the systems pursued in foreign countries, that the work in connection with the compilation and publication of official statistics is generally performed under two directions, the Statistical Bureau, in which the collection and preliminary manipulation of statistical data is undertaken, and the Central Commission, which exercises a general supervision and controlling authority over all the different branches, and a part of whose functions it is to secure harmony, proportion, order and uniform arrangement in the national statistics. This, however, is not the plan adopted in France, for although it is a country which is well represented in the matter of statistical bureaux, yet a central controlling direction still remains to be established.

"There are one or two points in connection with the existing French system which appear to call for some special comment, the first being the distribution of the administrative statistical bureaux. In glancing at the list of the various ministries to which statistical bureaux are attached, the reasons which led to their selection appear to be somewhat difficult to understand, for while some administrations have their own statistical office with an efficient staff, others have no departmental machinery at all at hand necessary for the collection and preparation of statistics, and are, in consequence, obliged to seek as a favour from other departments the materials for any returns which they may require. It is evident that this arrangement has not been the result of any preconceived plan, but is largely due to the action of individual administrators who have from time to time established in their particular department a special statistical bureau whenever it appeared to them to be expedient to do so. The time has arrived when it is absolutely necessary that a thorough revision of this distribution of statistical bureaux should be effected, and an endeavour made to organise some system of amalgamation.

"It is only after considerable experience in dealing with statistical data, that an *employé* is rendered thoroughly efficient in the manipulation of figures and the preparation of returns, a technical knowledge being absolutely indispensable; so, if for this reason alone the establishment of special bureaux is urgently needed, nothing is more likely to contribute to the acquirement of this technical knowledge, than a course of training in some such institution, having its own traditions, its own system of working, and its own particular staff.

"Another very serious defect in the French statistical organisation lies in the absence of harmony and uniformity in the official publications. As Quetelet observed in 1846:—'Each department

publishes its own statistical information perfectly independent of the other, and without the slightest regard to uniformity. Frequently different numbers are used to express precisely the same things, and classifications made which render comparisons impossible. This is particularly noticeable in statistics showing the distribution of the population among the various professions classed according to age. In France, while the Ministry of Commerce in dealing with any questions relating to cereals gives the quantity in *hectolitres*, it is represented in *quintaux metriques* and kilogrammes by the Customs Department.' It is only necessary to glance at the existing official publications to see how far M. Quetelet's criticisms are justified at the present day. In the preparation of statistical returns it is essential, in order to obtain comparable results, that there should be simplicity, uniformity, and identical classification, and, above all, unnecessary duplication of work should be avoided. Too much importance cannot be attached to these points. It was exactly with these objects in view that the establishment of Statistical Central Commissions, exercising a supervising and controlling authority in statistical matters undertaken by subordinate offices, has been adopted by the Belgian and other European Governments. At the Congresses of Brussels, Paris, Berlin, Florence, and the Hague, the necessity for the formation of such a controlling body was strongly urged. The following is the text of the resolution adopted at the Paris Congress in the year 1855:—'That there be established in each country a Central Statistical Commission, or a similar body, composed of representatives of the various public administrations and others who by reason of any special qualifications or technical knowledge may be competent to supervise the preparation of all statistical matter, and to simplify the many difficulties peculiar to this particular branch of science.'

"It will be seen in the description already given of the manner in which official statistics are prepared and published in the different countries, that the recommendations of the Paris Congress have been almost universally adopted, and they have not been without an echo in France, the Statistical Society of Paris being one of the first to recognise the paramount importance of the suggestion, and in order to establish a Central Statistical Commission, every effort has been made by the society as a body and the members individually. It appeared at one time, in 1875, that their efforts were about to be crowned with success, as the following passage occurred in the report drawn up by M. Cordier, member of the National Assembly, by direction of the Budget Committee: 'While fully recognising and appreciating the efforts of the administration to effect an improvement of the systems on which our national statistics are now prepared, we cannot refrain from expressing our regret that the present organisation of the service leaves much to be desired. The data from which these publications have been compiled appear to have been collected by different departments, acting independently of each other, without any central controlling authority, and by their independent action, all attempts at framing the statistical tables for convenience of comparison have been rendered abortive. It is

indispensable that there should be uniformity of language employed, without which the value of the tables is seriously impaired. In many countries these difficulties have been overcome by the appointment of a controlling authority over the action of the individual departments, such, for instance, as the Central Commission of Belgium, in which every ministry is represented, and which includes in its composition men who have made a speciality of the study of statistical science. Such an organisation could not fail to be productive of the most valuable results. By its action the statistical information now supplied would be greatly simplified and systematised, and greater uniformity and comparability would be provided for.'

"During the debate on the budget which took place on the 3rd August, 1875, M. Cordier expressed his opinion that the time had arrived when the adoption of a scheme similar to the one suggested by him was absolutely necessary—an opinion with which the majority of the National Assembly appeared to coincide. As a consequence of this recommendation, public attention was at once directed to the consideration of this important question, and two interesting reports were written on the subject: one in December, 1874, by M. Louis Passy, Under Secretary of State at the Ministry of Finance, and addressed to M. Mathieu Bodet, who was then chief of that department; the second was drawn up in February, 1875, by M. Ozenne, and addressed to M. Grivart, Minister of Agriculture and Commerce. Both M. Passy and M. Ozenne, in their reports, pointed out the evils arising from the existing system of collecting and preparing statistics, the incoherence and want of harmony in the returns themselves, and the methods which would be necessary to remedy these serious defects. They both also insisted upon the necessity of establishing a Central Statistical Commission, and even laid down the bases on which it should be established. The only point on which there appeared to be a divergence of opinion was the choice of the particular ministry to which the commission should be attached. M. Passy advocated the selection of the Ministry of Finance, and in his report the following passage occurs:—'The next point for consideration is the choice of ministry to which the Central Statistical Commission should be attached. I am of opinion that it should form part of the Ministry of Finance. It is the Finance Minister who receives from his colleagues and submits to the National Assembly the budgets of all the different ministries, and there is no reason to suppose that ministers would object to co-operate with the Finance Minister and be to a certain extent guided by him in the direction of matters statistical as well as financial. Besides, it is acknowledged that the bulk of moral and economical phenomena have a direct bearing upon taxation, and therefore influence the constitution of the budget.' M. Ozenne expresses himself on the subject as follows:—'As regards the selection of an administration to which this Commission should be attached, there can be no diversity of opinion—it should undoubtedly be the Ministry of Agriculture and Commerce. It is in this department that for many years the *Statistique Générale de la France* has been established, an office which undertakes the

preparation and publication of statistical information of a quality immeasurably superior to any collected in the other bureaux scattered among the various administrations, which is in constant communication with the foreign statistical departments, and which maintains a regular interchange of official publications. It is this department, designated the 'Ministry of Political Economy,' which is above all others interested in the establishment of a thoroughly perfected system of statistics, and which would naturally contribute the most to the attainment of this end. In 1834 the duties in connection with the carrying out of the programme of the centralisation of statistics were entrusted to this department. The recommendation contained in the report as to the improvement of statistics generally, and the formation of a Central Commission, were particularly addressed by the Budget Commission to this department. And, in consequence of these recommendations, it was resolved that the whole question of statistical reorganisation should be considered by it, and measures adopted with the object of effecting an improvement in the existing statistical *régime*. It is obvious, therefore, that this proposed commission should be established at the Ministry of Commerce, and be under its directions.'

"It will be easily understood that with these differences of opinion it was by no means an easy matter to decide upon the *locale* for this projected Commission. And besides this initial difficulty, there had to be overcome the ill concealed hostility of the various departments, who saw in the adoption of the scheme a curtailment of their privileges and an end to their independence; so although the suggested formation of a Central Commission at first received the warm approval of the several ministries, no active steps were taken to carry the recommendations into effect, and they remained virtually a dead letter; yet the ventilation of the question in 1875 was not without good results, inasmuch as the difficulties to be contended with were clearly brought to the surface, and various suggestions made for their removal.

"Your committee having carefully considered the many difficulties which would have to be overcome before the Central Commission could be satisfactorily established, are of opinion that it would be expedient to commence by removing the apprehensions of the statistical bureaux, and to announce that they would continue, as in the past, to be entrusted with the duties of directing and publishing their statistical work. On this point M. Passy observes 'There should be formed a combination of administrative energies, and not an appropriation of any for the benefit of one particular ministry.'

"This respect for existing institutions is not only expedient, and calculated to disarm suspicion and allay the fears of the independent offices, but it is imperatively demanded in the interests of the public service. In all respects the system of vesting supreme authority over statistical matters in the hands of a competent administration, would be far preferable to entrusting it to any inexperienced body. The supervising authority should undoubtedly possess an intimate and thorough knowledge of what is valuable in

the information possessed in the various departments, and should understand the resources of departmental machinery which is needed to secure accuracy in the collection of statistics, whereas there is reason to fear that the work performed by a body independent of the departments, and which would not command their sympathy, will necessarily be of a less valuable and reliable nature. As it is evident that the head of an administration would not be likely to ask for any particular information merely out of curiosity or with the object of piling up figures, his demands would receive far more careful attention at the hands of the departments referred to, than would be paid to a body without any particular claim to their support.

"To illustrate our meaning, supposing that certain information of a confidential nature affecting the administration of a railway company were required by a purely scientific body, it is highly improbable that the same attention would be paid to their questions, or even if the information were supplied would it be granted so readily or with such accuracy of detail as would be the case were the application made by the Director of Railways, whose duties bring him into constant communication with each railway company.

"Again, as regards the question of competency. When investigations have to be made into any particular subject, it is above all indispensable that the persons engaged upon the enquiry should be acquainted with the matter in hand, as a statistician who has but a superficial knowledge of the subject under investigation, and of the technical details in connection with it, would be liable to fall into the error of putting needless and vague questions. Being but imperfectly acquainted with the resources of the machinery he would have to set in motion, he would in all probability ask either for more information than could be given, or less than would be really required by him for his purpose. These errors would be avoided by an experienced statistician, as he would not be likely to set on foot any enquiry without first ascertaining whether it were practicable to obtain any reliable information on the subject, and counting the cost. He would thus be guided by the result of his enquiries in his decision, as he would be in a position to judge whether the ultimate result of the undertaking would compensate for the expenditure of time and money which its attainment would necessitate. These points would probably escape the notice of an inexperienced statistician.

"The necessity therefore of placing this institution under a competent authority cannot be too strongly urged; one good result alone would be that in the collection of any statistical data the most effective methods would be employed, and the value of the information itself would be considerably enhanced.

"A point which should not be overlooked is, that this new institution would be established solely with the object of developing and perfecting the existing statistical organisation; it would therefore be most essential to maintain the present bureaux, but supreme power should be placed in the hands of the controlling authority.

"As regards the name by which this controlling power should be known, the Committee are of opinion that with a view to accen-

tuate its consultative character, it would be preferable to style it a *Conseil Supérieur*, instead of a *Commission Centrale*, which is the term used in Belgium and elsewhere. The former designation has been adopted in Italy since the law of 18th February, 1882, decreeing the reorganisation of the national statistics; it is besides borne by several commissions attached to various ministries, and would appear to be the most suitable for this supervising authority.

"The Committee are also of opinion that it is not sufficient, as a preliminary measure, to reassure the various independent statistical bureaux; what is urgently needed is to be prepared with the selection of the particular ministry to which this Council or Commission should be attached. The experience of 1875 has taught us how necessary this measure is. The Committee have already devoted much care and attention to this subject; but on this point they are not disposed to offer any decided opinion, as the selection of the particular ministry appears to them to be a question entirely for the consideration of the Government. In the discussions which have taken place as to the settlement of this vexed question there has been great divergence of opinion; but on one point the Committee are agreed, that if there existed in France a Secretary of State Department the Central Commission should undoubtedly be attached to it, and with it should rest the authority for ultimate control. Such an office, however, does not exist in France, and in consequence the choice—a somewhat difficult one—lies between the other ministries.

"Some of the members decided in favour of the Ministry of Foreign Affairs, giving as their reasons that this department took no active part in the rivalry which paralysed the efforts made in 1875 to bring about a reorganisation of the existing system of collecting national statistics; that as it is an office having no statistical traditions or pretensions, it would be unlikely to excite any suspicion or distrust; by means of its diplomatic and consular staff it would be enabled to obtain the most interesting and valuable international statistical information, and could do much to bring about a resumption of the long interrupted International Congresses; and finally, by a strange coincidence, it appears that the head of this department is not only the President of the Council, and a distinguished statesman and economist, but he is also devoted to the study of statistical science, and an authority on all statistical matters. The services which he has rendered to the cause of statistical science are many; chief among them may be cited the establishment of the *Statistique graphique*, attributable solely to his initiative. M. de Freycinet, in fact, above all others, by reason of his position and influence in the cabinet and his well known predilection for statistics, might be depended upon to procure at the hands of his colleagues the adoption of the projected scheme. These are some of the reasons that influenced certain of the members of the Committee in their selection of the Ministry of Foreign Affairs as the one most suitable to which the new institution should be attached.

"Others again expressed themselves in favour of the Ministry of the Interior. This is the department in which the work in connection with the census returns is undertaken; it is in a

position, by reason of the authority it exercises over the *préfets*, not only to obtain information from the very fountain head, but to set in motion the Provincial Statistical Committees, the importance of whose co-operation cannot be too highly estimated. A certain objection has, however, been taken to this department, as, on account of its susceptibility to political influences, it is to be feared that statistics would not receive that dispassionate treatment which is so essential in the consideration of all matters affecting this particular branch of science. A suggestion has been made that the Ministry of Instruction should be selected as the one to which the Council should be attached, and there appears to be much in its favour. The proposed Council is not to be of an administrative character, but is intended rather to exercise the functions of a controlling and supervising body, whose efforts are to be directed mainly to the establishment of perfect uniformity and harmony in the national statistics, and the restriction of the present independent action of the various statistical offices. It might therefore well be placed under the directions of the Ministry of Science, in the same way as the important educational establishments.

" On the other hand, there are some who give the preference to the Ministry of Commerce. In the majority of those countries in which the Central Commission is in existence, it is to this department that it is attached; and even in France there is a Statistical Office at present belonging to it, where a mass of valuable statistical data is regularly collected. It is here that the *Annuire Statistique de la France* is prepared; and it is this department on which the title of 'Ministry of Political Economy' was bestowed in the reports of 1875. There appears to be a concensus of opinion that in all respects it is pre-eminently qualified to undertake the onerous task of establishing that harmony and order in official statistics which is so urgently needed. It must be understood that in calling attention to these divergences of opinion, your Committee refrain from recommending the selection of any particular department, as that would seem to be a question entirely for the decision of the Government. There is another matter in connection with the establishment of this new institution which requires careful consideration, that is, the constitution of the Council or Commission. On this point your Committee incline to the opinion that it would be advisable to follow the example set by other countries, and include in it the scientific element taken from beyond official circles. This element, however, should only enter into its composition to a limited extent, as otherwise it would have too much weight in the deliberations of the Council, and would tend to nullify the influence of the technical members. If the Council were to be so constituted as to render it too usceptible to theoretical considerations, and indifferent to the exigencies of the service, the administrations would be reduced to the unpleasant alternative of demurring to its wishes, or passively submitting to attempt a solution of inexplicable problems.

" It is therefore essential that although this scientific element should be well represented in the Council, it should not be allowed to exercise a predominant influence in its decisions.

"As regards the technical members, the Committee would recommend that the number of representatives of each ministry should not average more than two, unless ordained otherwise by special decree. Thus composed, the Council would comprise about thirty members; and as this number would be more than sufficient for the current work, the Committee are disposed to recommend the adoption, as in Italy, of a Supplementary Commission, or 'Permanent Committee,' which would be entrusted with the duties of elaborating the decisions of the Superior Council.

"There now only remains to be submitted a brief summary of the conclusions arrived at by the Committee on all the points in connection with the formation of this Statistical Council which they have under consideration. This summary they would prefer to submit in the shape of a decree which should receive the signature of all the Ministers, and they would recommend the adoption of the following formula in the event of the suggested scheme receiving official sanction and approval, and your Committee may remark that they have been in many respects influenced in the conclusions they have drawn by the suggestions contained in the reports of 1875, and the systems pursued in the organisation of similar institutions in other countries, particularly Belgium and Italy.

"The following is a draft of the decree recommended by the Committee:—

"Art. I. That there be established at the Ministry of . . . . . a Superior Statistical Council.

"Art. II. The Council under the presidency of the Minister of . . . . to consist of not more than twenty-eight members, as follows:—Twenty-two representatives of the different ministries, two to be selected from each; one delegate from the Préfecture of the Seine; and five distinguished statisticians or economists. The latter to be appointed by special decree, and the representatives of the ministries on the recommendation of the chiefs of their respective administrations. A third of the members to retire every two years, in order of seniority, or as decided on by ballot. Retiring members to be eligible for re-election.

"Art. III. Strangers possessing any special qualification or technical knowledge of the subjects to be discussed, may be invited to attend the meetings of the Council, but are not to be allowed to vote.

"Art. IV. A Permanent Committee, consisting of six members, to be established, and entrusted with the duties of elaborating the work, and insuring the execution of the directions issued by the Council. Half the members to retire every year, but to be eligible for re-election. Retiring members to be determined by ballot or seniority.

"Art. V. The powers to be exercised by the Council to be defined by a future decree, the provisional duties performed by it to be as follows:—

"1st. To advise on the most effective form in which statistical

returns should be given, and to devise means, in concert with the departmental officers, for securing uniformity of system.

"2nd. To decide what new statistical matter it would be desirable in the public interests to collect, and to select the department which should undertake it.

"3rd. To procure the publication of volumes or memoranda that might appear to be of any general interest, which would not actually come within the province of a ministerial department to prepare.

"Art. VI. Each department to continue to collect and publish its own statistical work, and to exercise its own discretion in the collection of any fresh statistical matter, subject only in the case of those returns which are intended for publication to the approval by the Council of the form of the tables and the mode of publication.

"In conclusion, your Committee have to report that the result of their investigations has clearly shown that statistical scientific centralisation and administrative decentralisation are everywhere found side by side. In France this centralisation is still wanting, and they are of opinion that the time has arrived when it should be introduced, care being taken at the same time to respect the autonomy of the existing statistical offices attached to the different administrations. This reform, in their opinion, would be effected by the creation of a Superior Statistical Council composed of official delegates and distinguished literary and scientific men, whose duties have been briefly sketched in the above rough draft of the proposed decree.

"Should the recommendations contained in this report receive the approval of your members, their concurrence would encourage the Committee to use every endeavour to bring the matter under the notice of the Government, with a view to the adoption of the scheme, and to hasten by all the means at their disposal, the introduction of that reform in our national statistical organisation which is so urgently needed.

III.—*Additions to the Library.*

Additions to the Library during the Quarter ended 30th December, 1882.

Donations.	By whom Presented.
Argentine Republic—	
Estadística del comercio Exterior y de la Navegacion Interior y Exterior de la República Argentina. Correspondiente al año 1881. xxii + 233 pp., la. 8vo. Buenos Aires, 1882	The Statistical Bureau of the Argentine Republic

Donations—Contd.

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Argentine Republic—*Contd.*	
Buenos Aires—	
Résumé de Statistique Générale de la Ville de—Premier semestre. 30 pp., la. 8vo. Buenos Ayres, 1882	The Statistical Bureau of the Province of Buenos Aires
Registro Estadístico de la Provincia de—. Año 1875. Segunda Época. Año vigesimo segundo. xii + 511 pp., folio. Buenos Aires, 1882	
Austria and Hungary—	
Nachrichten über Industrie, Handel und Verkehr, aus dem Statistischen Departement im K. K. Handels-Ministerium. XXIV Band la. 8vo. Wien, 1882—	
I Heft. Amtlicher Bericht über die Geschäftsthätigkeit des K. K. Handels-Ministeriums, wahrend des Jahres 1881. (Official Report)	Dr. Brachelli
II Heft. Statistik des österreichischen Telegraphen im Jahre 1881. Mit einer Uebersicht über den neuesten Stand des Telegraphen in Europa. (Telegraphs)	
III Heft. Statistik des österreichischen Postwesens im Jahre 1881. Mit einer Uebersicht über den neuesten Stand der Post in Europa. (Postal Service)	
Statistisches Jahrbuch. La. 8vo.—	
II Heft, für 1880. Landwirthschaftliche Production, Viehstand, Markt - Durchschnittspreise, See-Fischerei, Montan-Industrie. (Agriculture, Live Stock, Market Prices, Sea Fishery, Mining Industry)	The Imperial Central Statistical Commission
XI Heft, für 1881. Heer, Kriegsmarine (Army and Navy)	
Budapest. *Statistique Internationale.* Bulletin Annual des Finances des Grandes Villes. Quatrième année, 1880. Rédigé par Joseph Kőrösi. 39 pp., la. 8vo. Budapest, 1882	Joseph Kőrösi, Esq., Budapest
Hungary. Magyarország Arúforgalma, Ausztriával és más országokkal. A Földmivelés-, ipar- és Kereskedelemügyi Minister úr Rendeletéből szerkeszti és kiadja as Országos Magyar kir, Statistikai Hivatal. Füzet V-VIII. La. 4to. Budapest, 1882. (Trade Statistics)	The Statistical Bureau, Budapest
Statisches Jahrbuch für Ungarn. 10ter *Jahrgang*, 1880. La. 8vo. Budapest, 1882 :—	
I Heft. Politische Eintheilung und Bewegung der Bevölkerung. (Political Classification and Movement of Population)	The Royal Hungarian Statistical Bureau
III Heft. Landwirtschaft. Ernte und Weinlese. Gesundheitsverhältnisse der Nutzthiere. Marktpreise. (Agriculture)	
IV Heft. Bergbau und Hüttenwesen (Mining and Smelting)	
VI Heft. Die Creditinstitute (Credit Institute) ..	
IX Heft. Cultus und Unterrichtswesen. (Religion and Education)	
X Heft. Staatshaushalt. (Finance)	
XI Heft. Kriegsmacht. (Army)	

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Austria and Hungary—*Contd.*	
Prague. Týdenní zpráva o úmrtích v Praze a obcech spojených, kteréž, jsou, &c. (Weekly Returns of Deaths)	The Statistical Bureau
Belgium—	
Annuaire Statistique de la Belgique. 12e année, 1881. xlvi + 424 pp., maps, la. 8vo. Bruxelles, 1882	The Minister of the Interior
Bulletin de la Commission Centrale de Statistique. Tome xiv. Statistique Générale de l'instruction publique en Belgique. xxxiii + 854 + 112 pp., maps, la. 4to. Bruxelles, 1881	
Exposé de la Situation du Royaume, de 1861 à 1875. Vol. ii. Fasc. 8—11. La. 8vo. Bruxelles	
Ville de Bruxelles—	
Bulletin Hebdomadaire de Statistique, Démographique et Médicale. (Current numbers)	Dr. E. Janssens, Brussels
Rapport fait au Conseil Communal en séance du 2 Octobre, 1882, par le Collège des Bourgmestre et Echevins. 193 pp., diagram, 8vo. Bruxelles	The Bureau of Hygiène, Brussels
China. *Imperial Maritime Customs.* 4to. Shanghai, 1882. I. *Statistical Series*—	
No. 2. Customs Gazette. Returns of Trade, &c. April—June, 1882	Sir Robert Hart, K.C.M.G., Pekin
No. 3. Returns of Trade at the Treaty Ports for 1881. Part 2. Statistics of the Trade at each Port	
Denmark. Nationalökonomisk Tidsskrift, 8de—10de Hefte. Kjöbenhavn, 1882	The Danish Political Economy Society
Egypt. Bulletin Trimestriel de la Navigation par le Canal de Suez. Troisième Année, No. 1, du 1er Janvier au 31 Mars, 1882	The Director-General of Statistics, Cairo
France—	
Annuaire Statistique de la—5ieme année—1882. xxiii + 612 pp., la. 8vo. Paris	The Ministry of Commerce
Compte Général de l'Administration de la Justice civile et commerciale pendant 1880. xcv + 205 pp., plates, la. 4to. Paris, 1882	The Ministry of Justice
Compte Général de l'Administration de la Justice criminelle pendant 1880. clxxii + 241 pp., plates, la. 4to. Paris, 1882	
Ministère des Finances. Bulletin de Statistique et de Législation comparée. Septembre—Novembre, 1882	M. A. De Foville
Ministère des Travaux Publics. Bulletin du—Septembre 1882	The Ministry of Public Works
Statistique de la—Nouvelle Série, Tome ix. Statistique Annuelle, 1879. cxxx + 436 pp., folio. Paris, 1882	The Ministry of Agriculture and Commerce
L'Economiste Français. (Current numbers.) Paris	The Editor
Révue Bibliographique Universelle, Paris, 1882—	
Partie Littéraire. Octobre—Novembre, 1882	"
Partie Technique. Octobre—Novembre, 1882	"

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Donations.	By whom Presented.
France—*Contd.*	
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(FOUNDED 1834,)

SOMERSET HOUSE TERRACE (KING'S COLLEGE ENTRANCE),

STRAND, W.C., LONDON.

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1883.

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AN OUTLINE OF THE OBJECTS OF

THE STATISTICAL SOCIETY.

The *Statistical Society* of London was founded, in pursuance of a recommendation of the British Association for the Advancement of Science, on the 15th of March, 1834; its object being, the careful collection, arrangement, discussion and publication, of facts bearing on and illustrating the complex relations of modern society in its social, economical, and political aspects,—especially facts which can be stated numerically and arranged in tables;—and also, to form a Statistical Library as rapidly as its funds would permit.

The Society from its inception has steadily progressed. It now possesses a valuable Library and a Reading Room; ordinary meetings are held monthly from November to June, which are well attended, and cultivate among its Fellows an active spirit of investigation: the papers read before the Society are, with an abstract of the discussions thereon, published in its *Journal*, which now consists of forty-five annual volumes, and forms of itself a valuable library of reference.

The Society has originated and statistically conducted many special inquiries on subjects of economic or social interest, of which the results have been published in the *Journal* or issued separately; the latest instance being the institution of the "Howard Medal" Prize Essay.

To enable the Society to extend its sphere of useful activity, and accomplish in a yet greater degree the various ends indicated, an increase in its numbers and revenue is desirable. With the desired increase in the number of Fellows, the Society will be enabled to publish standard works on Economic Science and Statistics, especially such as are out of print or scarce, and also greatly extend its collection of Foreign works. Such a well-arranged Library for reference, as would result, does not at present exist in England, and is obviously a great *desideratum*.

The Society is cosmopolitan, and consists of Fellows and Honorary Members, forming together a body, at the present time, of between *eight and nine hundred* Members.

The Annual Subscription to the Society is *Two Guineas*, and at present there is no entrance fee. Fellows may, on joining the Society, or afterwards, compound for all future Annual Subscriptions by a payment of *Twenty Guineas*.

The Fellows of the Society receive gratuitously a copy of each part of the *Journal* as published Quarterly, and have the privilege of purchasing back numbers at a reduced rate. The Library (reference and circulating), and the Reading Room, are open daily, for the convenience of Members.

Nomination Forms and any further information will be furnished, on application to the Assistant Secretary.

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1882	MON.	TUES.	WED.	THURS.	FRI.	SATUR.	SUN.
NOV.	...	...	1	2	3	4	5
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JUNE	...	...	...	...	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	**19**	20	21	22	23	24
	25	26	27	28	29	30	...
JULY	...	...	...	...	...	...	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	...	...	...	...	...
AUG.	...	...	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	...	...
SEP.	...	...	...	...	...	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
OCT.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	...	...	...	...

The Ordinary Meetings of the Society, at which Papers are read and discussed, are marked in the Calendar above by Black Figures.

The Chair will be taken at 7.45 *p.m., precisely.*

Visitors may attend the Ordinary Meetings on the introduction of a Fellow.

THE ANNIVERSARY MEETING

WILL BE HELD ON THE 26TH JUNE, 1883, AT 4 P.M.

MONTHLY MEETINGS—Session 1882-83.

HELD ON THE

THIRD TUESDAY IN THE MONTHS OF NOVEMBER—JUNE.

(*Except May*).

Tuesday,	Nov.	21.	Tuesday,	March	20.
,,	Dec.	19.	,,	April	17.
,,	Jan.	16.	,,	May	22.
,,	Feb.	20.	,,	June	19.

The Council have reason to expect that in the course of the Session the following Papers will, among others, be communicated to the Society :—

The PRESIDENT's Inaugural Address on opening the Session. By ROBERT GIFFEN, Esq.

"Twelve Years' Work since 1870, under the Elementary Education Acts." By ROWLAND HAMILTON, Esq.

"The Recent Reduction in the Death Rate and its influence on the Duration of Life in England and Wales." By NOEL A. HUMPHREYS, Esq.

"The Laws of Foreign Countries with reference to Trade Marks, and Statistics as to the Registration of them where it has been enacted." By EDMUND JOHNSON, Esq.

"Statistics of Agricultural Production." By Major PATRICK G. CRAIGIE.

"A Statistical Chronology of Plagues and Pestilences as affecting Human, Animal, and Vegetable Life, with an Inquiry into their Causes." By C. WALFORD, Esq.

"The International Statistics of Science." By J. S. JEANS, Esq.

"Electoral Statistics as bearing on a prospective redistribution of the County Franchise." By JOHN B. MARTIN, Esq.

"Education in India." By the Rev. JAMES JOHNSTON.

HOWARD MEDAL, 1883.

The usual annual competition for the "Howard Medal" (1883) will take place subject to the same conditions as before. The Essays to be sent in on or before 30th June, 1883.

(*The Medal is of Bronze, having on one side a portrait of John Howard, on the other a Wheatsheaf, with suitable inscription*).

The Council have again decided to grant the sum of £20 to the writer who may gain the "Howard Medal" in November, 1883.

The subject is—

"*The best Exposition of the Experiences and Opinions of John "Howard on the Preservation and Improvement of the Health of "the Inmates of Schools, Prisons, Workhouses, Hospitals, and "other Public Institutions, as far as Health is affected by Struc-"tural Arrangements relating to supplies of Air and Water, "Drainage, &c.*"

Candidates are referred to the Text and Foot-notes of Howard's two works on "Prisons" and "Lazarettos."

The following are the principal conditions:—

The Howard Medal shall be presented in the name of the President, Council, and Fellows of the Statistical Society, to the Author of the best Essay on some subject in "*Social Statistics*," a preference being given to those topics which Howard himself investigated, and illustrated by his labours and writings.

Each Essay to bear a motto, and be accompanied by a sealed letter, marked with the like motto, and containing the name and address of the author; such letter not to be opened, except in the case of the successful Essay.

No Essay to exceed in length 150 pages (8vo.) of the *Journal of the Statistical Society*.

The Council shall, if they see fit, cause the successful Essay, or an abridgment thereof, to be read at a Meeting of the Statistical Society; and shall have the right of publishing the Essay in their *Journal* one month before its appearance in any separate independent form; this right of publication to continue till three months after the award of the Prize.

The President shall place the Medal in the hands of the successful Candidate, at the conclusion of his Annual Address, at the ordinary Meeting in November, when he shall also re-announce the subject of the Prize Essay for the following year.

Competition for this Medal shall not be limited to the Fellows of the Statistical Society, but shall be open to any competitor, providing the Essay be written in the English language.

The Council shall not award the Prize, except to the author of an Essay, in their opinion, of a sufficient standard of merit; no Essay shall be deemed to be of sufficient merit that does not set forth the facts with which it deals, in part, at least, in the language of figures and tables; and distinct references should be made to such authorities as may be quoted or referred to.

Further particulars or explanations may be obtained from the Assistant Secretary, at the Office of the Society (King's College Entrance), Strand, London, W.C.

LIST OF THE FORMER

Patron and Presidents

OF THE

STATISTICAL SOCIETY,

From its Foundation, on 15th March, 1834.

Patron.

Period.	
1840–61	His Royal Highness The Prince Consort, K.G.

Presidents.

1834–36	The Most Noble the Marquis of Lansdowne, F.R.S.
1836–38	Sir Charles Lemon, Bart., M.P., F.R.S., LL.D.
1838–40	The Right Hon. the Earl Fitzwilliam, F.R.S.
1840–42	The Right Hon. the Viscount Sandon, M.P. (afterwards Earl of Harrowby.)
1842–43	The Most Noble the Marquis of Lansdowne, K.G., F.R.S.
1843–45	The Right Hon. the Viscount Ashley, M.P. (now Earl of Shaftesbury.)
1845–47	The Right Hon. the Lord Monteagle.
1847–49	The Right Hon. the Earl Fitzwilliam, F.R.S.
1849–51	The Right Hon. the Earl of Harrowby.
1851–53	The Right Hon. the Lord Overstone.
1853–55	The Right Hon. the Earl Fitzwilliam, K.G., F.R.S.
1855–57	The Right Hon. the Earl of Harrowby, K.G., D.C.L.
1857–59	The Right Hon. the Lord Stanley, M.P. (now Earl of Derby.)
1859–61	The Right Hon. the Lord John Russell, M.P., F.R.S. (afterwards Earl Russell.)
1861–63	The Right Hon. Sir J. S. Pakington, Bart., M.P., G.C.B. (afterwards Lord Hampton.)
1863–65	Colonel W. H. Sykes, M.P., F.R.S.
1865–67	The Right Hon. the Lord Houghton, D.C.L., F.R.S.
1867–69	The Right Hon. W. E. Gladstone, M.P., D.C.L.
1869–71	W. Newmarch, Esq., F.R.S., Corr. Mem. Inst. of France.
1871–73	William Farr, Esq., M.D., C.B., D.C.L., F.R.S.
1873–75	William A. Guy, Esq., M.B., F.R.S.
1875–77	James Heywood, Esq., M.A., F.R.S., F.G.S.
1877–79	The Right Hon. George Shaw Lefevre, M.P.
1879–80	Sir Thomas Brassey, K.C.B., M.P.
1880–82	Sir James Caird, K.C.B., F.R.S.

LIST OF FELLOWS.

*Those marked thus * have compounded for their Annual Subscriptions.*

The names of Members of Council are printed in SMALL CAPITALS.

Year of Election.	
1882	Abbott, Joseph, L.D.S., R.C.S., 98, *Queen-street, Exeter.*
1878	Abdur Rahman, Moulvie Syud, F.R.C.I. (*Barrister-at-Law*), 42, *Taltollah-lane, Calcutta, India.*
1876	Abrahams, Israel, F.R.G.S., 65, *Russell-square, W.C.*
1870	Absolon, Eugene, 12, *Wellington-square, King's-road, Chelsea, S.W.*
1862	Acland, Henry Wentworth, M.D., F.R.S., *Oxford.*
1869	Acland, Sir Thomas Dyke, Bart., M.P., *Killerton, Exeter; and Athenæum Club, S.W.*
1881	Acton, John Adams, 103, *Marylebone-road, N.W.*
1879	Adam, Robert (*City Chamberlain*), *City Chambers, Edinburgh.*
1867	Addison, John, 6, *Delahay-street, Great George-street, S.W.*
1880	Aitchison, David, 5, *Pembridge-square, W.*
1876	Aitchison, William John, 2, *Princes-street, E.C.*
1879	Akers-Douglas, Aretas, M.P., J.P., *Chilston Park, Maidstone, Kent.*
1841	Aldam, William, F.R.S., *Frickley Hall, Doncaster.*
1876	Aldwinckle, Thomas Williams, 7, *East India-avenue, Leadenhall-street, E.C.*
1872	Alexander, Robert Henry, 24, *Lombard-street, E.C.*
1876	Allen, John T. R., *North Bailey, Durham.*
1875	Allen, Joseph, *St. Mildred's House, Poultry, E.C.*

Year of Election.

1877 Allen, Joseph,
21, *Waterhouse-street, Halifax, Yorkshire.*

1878 Anderson, A. F.,
131, *Mount Pleasant, Liverpool.*

1878 Anderson, Edward C., M.A., M.D.,
Tow-Law, Darlington.

1871 Anderson, Sir James, F.R.G.S., F.G.S.,
66, *Old Broad-street, E.C.*

1871 Angus, R. B.,
Montreal, Canada.

1881 Ansell, H. F. B., A.C.A.,
Oficina La Limeña, La Moria, Iquique, S. America.

1872 *Archibald, William Frederick A., M.A.,
3, *Amersham-road, Putney, S.W.*

1871 Atkinson, George W.,
1, *Regent-street, Barnsley.*

1882 Atterbury, Frederick
Inland Revenue, Somerset House, W.C.

1870 Avery, Thomas,
Church-road, Edgbaston, Birmingham.

1872 *Babbage, Major-General Henry P.
Dainton House, Bromley, Kent.

1872 *Backhouse, Edmund,
Middleton Lodge, Richmond, York.; Reform Club, S.W.

1875 Baddeley, Samuel,
Freeland's-road, Bromley, Kent.

1879 Baden-Powell, George S., M.A., F.R.A.S.,
8, *St. George's-place, Hyde Park Corner, S.W.*

1855 Bailey, Arthur Hutcheson, F.I.A. (*Vice-President*),
7, *Royal Exchange, E.C.*

1858 Baines, Sir Edward,
St. Ann's-hill, Burley, Leeds.

1881 Baines, Jervoise Athelstane, C.S.,
Secretariat, Poona, Bombay Presidency, India

1882 Baker, Daniel
The Caklands, Small Heath, Warwickshire.

1879 Baker, W. Mills,
Stoke Bishop, near Bristol.

1878 Balfour, Arthur James, M.P.,
4, *Carlton-gardens, S.W.*

1848 Balfour, General Sir George, K.C.B., M.P., D.L.
6, *Cleveland-gardens, Bayswater, W.*

1873 Balfour, Jabez Spencer, M.P.,
20, *Budge-row, Cannon-street, E.C.*

Year of Election.	
1865	Balfour, T. Graham, M.D., F.R.S., *Coombe Lodge, Wimbledon-park, S.W.*
1879	Bamber, Edward Fisher, C.E., 67, *Shaftesbury-road, Ravenscourt-park, W.*
1877	Barbour, William B., 196, *Haverstock-hill, N.W.*
1873	Barham, Francis F., *Bank of England, Birmingham.*
1880	*Baring, Thomas Charles, M.P., *High Beach, Loughton.*
1881	*Barrington-Kennett, V. B., M.A., LL.M., Cantab., 15, *Hyde Park-gardens, W.*
1878	Barry, Francis Tress, *St. Leonard's-hill, Windsor.*
1879	Barry, Frederick W., M.D. *Local Government Board, Whitehall, S.W.*
1881	Bartlett, Robert Vincent Osborne, 16, *West End-terrace, Newport, Isle of Wight.*
1872	*Bass, Sir Michael Arthur, Bart., M.P., 101, *Eaton-square, S.W.; Rangemore, Burton-on-Trent.*
1836	Bass, Michael Thomas, M.P., 101, *Eaton-square, S.W.; Rangemore, Burton-on-Trent.*
1873	Bate, George, 10, *City-road, E.C.*
1877	Bateman, Alfred Edmund (*Secretary*), *Board of Trade*, 1, *Whitehall, S.W.*
1876	Baxter, Robert, 5 *and* 6, *Victoria-street, Westminster, S.W.*
1877	Bayfield, Arthur, 32, *Temple-row, Birmingham.*
1873	*Baynes, Alfred Henry, F.R.G.S., 19, *Castle-street, Holborn, E.C.*
1871	*Baynes, William Wilberforce, F.I.A., 32, *Moorgate-street, E.C.*
1877	Beadel, William J., *Springfield Lyons, Chelmsford.*
1875	*Beardsall, Francis E. M., 64, *Cross-street, Manchester.*
1878	*Beauchamp, The Right Hon. Earl, 13, *Belgrave-square, S.W.*
1875	*Beaufort, William Morris, F.R.A.S., F.R.G.S., &c., 18, *Piccadilly, W.*
1882	*Beazeley, Michael Wornum, 3, *Church-villas, St. Paul's-road, Thornton Heath, Surrey.*
1880	Beddell, Charles, 5, *Lothbury, E.C.*
1863	Beddoe, John, B.A., M.D., F.R.S., 2, *Lansdowne-place, Clifton.*
1872	*Bedford, His Grace, the Duke of, *Woburn Abbey, Oakley, Bedford.*

Year of Election.	
1882	*Beeton, Henry Ramie, 42, *Belsize-square, South Hampstead, N.W.*
1879	Beggs, Thomas, 55, *Russell-square, W.C.*
1880	Bell, Isaac Lowthian, J.P., *Rounton Grange, Northallerton, York, N.R.*
1878	Bellew, The Right Hon. Lord, *Barmeath, Dunleer, Ireland*
1856	*Beresford-Hope, The Right Hon. A. J., M.P., D.C.L., 1, *Connaught-place, W.*
1881	Besso, Marco, *Compagnia di Assicurazioni Generali, Trieste.*
1879	Bevan, G. Phillips, D.L., F.G.S., *Uplands, Richmond, Surrey.*
1875	Bevan, Thomas, *Stone Park, near Dartford, Kent.*
1869	*Beverley, Henry, *Bayshill Lodge, Cheltenham.*
1879	*Bickford-Smith, W., J.P., D.L., &c., *Trevarno, Helston, Cornwall.*
1881	Bishop, George, 131, *Powis-street, Woolwich.*
1877	Bishop, George Houlton, M.R.C.S., *Lock Hospital, Harrow-road, W.*
1877	Boddy, Evan Marlett, L.R.C.P., (*Lifford House, Dartford*), 111, *Camberwell-road, S.E.*
1873	Bogie, James, 5, *Spence-street, Newington, Edinburgh.*
1877	Bolam, Harry George, *Little Ingestre, Stafford.*
1881	Bolitho, Thomas Robins, *Pendrea, near Penzance.*
1880	Bolton, Joseph C., M.P., 40, *Queen's-gate, South Kensington, S.W.*
1879	Borchardt, Louis, M.D., *Swinton House, Fallowfield, Manchester.*
1879	Bordman, Thomas Joseph Clarence Linden, LL.D., *Victoria House, Trinity-street, Southwark, E.C.*
1875	Borthwick, The Right Hon. Lord, *Ravenstone, Whithorn, Wigtonshire, N.B.*
1881	Bourdillon, James Austin, *Larkin's-lane, Calcutta, India.*
1881	Bourinot, John George, *Ottawa, Canada.*
1871	Bourne, Stephen, *H.M. Custom House, E.C.; Abberley, Wallington, Surrey.*

Year of Election.	
1877	Boutcher, Emanuel, 12, *Oxford-square, Hyde Park, W.*
1876	Bowen, Horace George, *Bank of England, E.C.*
1879	Bowley, Edwin, *Burnt Ash-hill, Lee, Kent.*
1880	Bowser, Wilfred Arthur, 110, *Cannon-street, E.C.*
1874	Brabrook, Edward William, F.S.A., M.R.S.L., 28, *Abingdon-street, S.W.*
1875	Braby, James, J.P., *Maybanks, Rudgwick, Sussex.*
1874	Bramley-Moore, John, D.L., *Gerrard's-cross, Bucks.*
1855	Brand, The Rt. Hon. Sir Henry Bouverie Wm., M.P., G.C.B., *Speaker's Court, House of Commons, S.W.*
1873	Brassey, Sir Thomas, K.C.B., M.P., (*Honorary Vice-President*), 4, *Great George-street, S.W.; and* 24, *Park-lane, W.*
1864	*Braye, The Right Hon. the Lord, 40, *Grosvenor-street; Stanford Hall, Rugby.*
1876	Brodhurst, Bernard Edward, F.R.C.S., 20, *Grosvenor-street, Grosvenor-square, W.*
1874	Broom, Andrew, A.C.A., *The Ferns, Bushey Hill-road, Camberwell, S.E.*
1878	Brown, Alexander Hargreaves, M.P., 12, *Grosvenor-gardens, S.W.*
1872	Brown, James Bryce, F.R.G.S., 90, *Cannon-street, E.C.; and Bromley, Kent.*
1875	Browne, Thomas Gillespie C., F.I.A., 11, *Lombard-street, E.C.*
1865	Bunce, John Thackray, *Longworth, Priory-road, Edgbaston, Birmingham.*
1880	Burdett, Henry Charles, 39, *Gloucester-road, Regent's-park, N.W.*
1873	*Burdett-Coutts, The Right Hon. the Baroness, 1, *Stratton-street, W.; and Holly Lodge, Highgate, N.*
1882	Burgess, John, 7, *Alexandra-terrace, Hailsham.*
1872	Burns, The Rev. Dawson, M.A., D.D., 52, *Parliament-street, S.W.*
1874	Burr, William, 42, *Poultry, E.C.*
1880	Burt, Frederick, F.R.G.S., *Woodstock, Crouch End, N.*
1882	Butchart, Robert G., 6, *Petersham-terrace, S.W.*

Year of Election.	
1880	Caine, William S., M.P., 1, *The Terrace, Clapham Common, S.W.*
1857	Caird, Sir James, K.C.B., F.R.S., (*Honorary Vice-President and Trustee*), 8, *Queen's-gate-gardens, S.W.; & Cassencary, Creetown, N.B.*
1880	Caird, Robert Henryson, 6, *Petersham-terrace, S.W.*
1879	Campbell, Lord Colin, M.P., 79, *Cadogan-place, S.W.*
1874	Campbell, Sir George, K.C.S.I., M.P., D.C.L., 17, *Southwell-gardens, South Kensington, S.W.*
1877	Campbell, George Lamb, *Market-street, Wigan.*
1879	Campbell-Colquhoun, Rev. John Erskine, *Chartwell, Westerham, Kent.*
1862	Cape, George A., 8, *Old Jewry, E.C.*
1881	Carden, Lionel Edward Gresley, (*H.M. Consul*), *Havana, Cuba, W.I.*
1872	*Carillon, J. Wilson, F.S.A., F.R.G.S., *Wormhill, Buxton, Derbyshire.*
1871	Carnac, Harry Rivett-, *Calcutta, Bengal, India.*
1876	Carphin, James Rhind, C.A., 14, *Hanover-street, Edinburgh.*
1877	Carter, E. Harold,
1848	Carter, John Bonham, *Adhurst St. Mary, Petersfield.*
1878	*Casley, Reginald Kennedy, M.D., *Northgate-street, Ipswich.*
1880	Castle, Robert, 18, *Merton-street, Oxford.*
1881	Causton, Richard Knight, M.P., 3, *Clanricarde-gardens, W.*
1858	Chadwick, David, *The Poplars, Herne Hill, Dulwich, S.E.*
1834	Chadwick, Edwin, C.B.. *Park Cottage, East Sheen, Mortlake, S.W.*
1869	Chadwick, John Oldfield, F.R.G.S., 24, *Budge-row, Walbrook, E.C.*
1880	*Chamberlain, The Right Honourable Joseph, M.P., 40, *Prince's-gardens, S.W.*
1873	Charlesworth, Frederic, *Widmore, Bromley, Kent.*
1851	*Cheshire, Edward, 3, *Vanbrugh Park, Blackheath, S.E.*
1877	Child, Robert Carlyle, 101, *Leadenhall-street, E.C.*

Year of Election.	
1853	Chisholm, David, F.I.A., *64, Princes-street, Edinburgh.*
1869	Chubb, Hammond, B.A., (*Secretary*), *Bickley, Kent.*
1877	Clapham, Crochley, L.R.C.P., *Muriel House, Peak Hill, Sydenham, S.E.*
1849	Clark, Gordon Wyatt, *Mickleham Hall, near Dorking, Surrey.*
1856	Clark, Sir John Forbes, Bart., *Tillypronie, Tarland, Aberdeen.*
1882	Clarke, Arthur Edward, *Wisbech.*
1871	Clarke, Ebenezer, jun., *52, Cannon-street, E.C.*
1882	*Clarke, Ernest, *Share and Loan Department, Stock Exchange, E.C.*
1880	Clarke, Frederick Nevill, *Oakwood, Fountain-road, Upper Norwood, S.E.*
1877	*Clarke, Henry, L.R.C.P., *H.M. Prison, Wakefield, Yorks.*
1876	Clarke, Henry Harcourt Hyde, *32, St. George's-square, S.W.*
1856	*Clarke, Hyde, *32, St. George's-square, S.W.*
1869	Cleghorn, John, *3, Spring-gardens, S.W.*
1850	*Cleveland, His Grace the Duke of, K.G., *Battle Abbey, Sussex.*
1853	Clirehugh, William Palin, F.I.A., *66, Cornhill, E.C.*
1877	Cobb, B. Francis, *79, Cornhill, E.C.*
1873	Cockle, Captain George, F.R.G.S., *9, Bolton-gardens, South Kensington, S.W.*
1877	Cohen, Lionel Louis, (*Vice-President*), *9, Hyde Park-Terrace, W.*
1838	Colebrooke, Sir Thomas Edward, Bart., M.P., *14, South-street, W.*
1859	Coles, John, F.I.A., *39, Throgmorton-street, E.C.*
1874	Collins, Eugene, M.P., *38, Porchester-terrace, Hyde Park, W.*
1877	Collins, J. Wright, J.P. (*Colonial Treasurer*), *Stanley, Falkland Islands.*
1874	Collinson, John, F.R.G.S., *90, Cromwell-road, S.W.*
1882	*Collum, Rev. Hugh R., M.R.I.A., F.R.C.I., *Vicar of Leigh, near Tonbridge, Kent.*
1867	Colman, Jeremiah James, M.P., *Carrow House, Norwich.*

Year of Election.	
1878	Colomb, Captain J.C.R., R.M.A., J.P., *Droumquinna, Kenmare, Kerry.*
1879	Cooke, H. Ribton, 22, *Great St. Helen's, E.C.*
1879	Cooke, Isaac B., 8, *Wellington-road, Oxton, Birkenhead.*
1874	*Cookson, Faithful, F.R.G.S., 35, *Grand Parade, Brighton.*
1879	Cooper, William John, 7, *Westminster-chambers, Victoria-street, S.W.*
1843	*Copperthwaite, William Charles, *New Malton, Yorkshire.*
1874	Corbett, John, 6A, *Waterloo-place, Pall Mall, S.W.*
1873	Cork, Nathaniel, F.R.G.S., 39, *Lombard-street, E.C.*
1878	Cornish, William Robert, F.R.C.S. (*Surgeon Major*), *Sanitary Commissioner, Madras.*
1862	Courtney, Leonard Henry, M.A., M.P., 15, *Queen Anne's Gate, Westminster, S.W.*
1882	Cowen, Charles, *Port Elizabeth, Cape of Good Hope.*
1873	Cowper, The Hon. Henry Frederick, M.P., 4, *St. James's-square, S.W.*
1880	Cox, William John,
1880	Craig, William Young, M.P., *Palace Chambers, St. Stephen's, Westminster, S.W.*
1874	Craigie, Major Patrick George, 6, *Lyndhurst-road, Hampstead, N.W.*
1870	Craik, George Lillie, 29, *Bedford-street, Strand, W.C.*
1872	Crellin, Philip, 33, *Chancery-lane, W.C.*
1878	Crewdson, Ernest, 5, *Norfolk-street, Manchester.*
1879	Crisford, George S., F.I.A., *West of England Insurance Company, Exeter.*
1880	*Crompton-Roberts, Charles H. 16, *Belgrave-square, S.W.*
1876	Crosse, John Burton St. Croix, F.R.C.S., *Royal Military Asylum, Chelsea, S.W.*
1878	Crossman, James H., J.P., *Union Club, Trafalgar-square, S.W.*
1879	Cunningham, Charles L., M.R.C.S., &c.
1875	Cunningham, David, C.E., *Works' Office, Harbour-chambers, Dundee.*
1879	Curtis, Robert Leabon, F.S.I., 15 *and* 16, *Blomfield-street, E.C.*

Year of Election.	
1873	Czarnikow, Cæsar, *Mitcham, Surrey.*
1869	Dalyell, The Hon. Robert Anstruther, C.S.I., *India Office, Westminster, S.W.*
1880	Danvers, Frederick Charles, *India Office, Westminster, S.W.*
1873	Danvers, Juland, *India Office, Westminster, S.W.*
1869	Davies, James Mair, *Chambers, 69, West Regent-street, Glasgow.*
1874	Davies, William Henry, 51, *Tregunter-road, S.W.*
1873	Dawson, James Thomas, 79, *Cornhill, E.C.*
1876	Day, William Ansell, *Lyndhurst House, Hendon, N.W.*
1880	Débenham, Frank, 26, *Upper Hamilton-terrace, St. John's Wood, N.W.*
1879	*De Ferrieres, The Baron Du Bois, M.P., J.P., *Bay's-hill House, Cheltenham.*
1873	Delahunty, James,
1877	Deloitte, William Welch, 4, *Lothbury, E.C.*
1873	Dent, Clinton Thomas, F.R.C.S. 19, *Savile-row, W.*
1873	Dent, Edward, *Fernacres, Fulmer, near Slough, Bucks.*
1855	*Derby, The Right Hon. the Earl of, P.C., F.R.S., (*Honorary Vice-President*), 23, *St. James's-square; and Knowsley, Prescot, Lancashire.*
1877	Dever, Henry, 4, *Lothbury, E.C.*
1877	De Worms, Baron Henry, M.P., F.R.A.S., *H* 2, *Albany, Piccadilly, W.*
1866	*Dilke, Sir Charles Wentworth, Bart., M.P., LL.M., 76, *Sloane-street, S.W.*
1881	Dillon, Malcolm, 18, *King William-street, E.C.*
1873	Dixon, George, *The Dales, Edgbaston, Birmingham.*
1881	Dobell, R. R., *Quebec, Canada.*

Year of Election.

1876 Dowden, Lieutenant-Colonel Thomas Freeman, R.E.,
York Lodge, Kew Gardens.

1875 Doxsey, Rev. Isaac,
The Grove, Camberwell, S.E.

1878 Doyle, Patrick, C. E.,
O'Brien Villa, 21, *North-road, Entally, Calcutta.*

1872 Droop, Henry Richmond,
1*a*, *New-square, Lincoln's-inn, W.C.*

1878 Duignan, William Henry,
Walsall, Staffordshire.

1875 Dun, John,
Parr's Banking Company, Limited, Warrington.

1870 Duncan, James,
9, *Mincing-lane, E.C.*

1878 *Dunraven, The Right Hon. Earl of, K.P.,
Kenry House, Putney Vale, S.W.

1836 Edmonds, Thomas Rowe, B.A.,
72, *Portsdown-road, Maida-vale, W.*

1869 Edmonds, William,
Annesley House, Southsea.

1880 Egerton, Honourable Wilbraham, M.P.,
23, *Rutland Gate, S.W.*

1872 Elliot, Sir George, Bart., M.P.,
Park-street, Park-lane, W.

1882 Elliott, Henry Thomas Worton,
Inland Revenue Office, Somerset House, W.C.

1877 Ellis, Arthur,
The Park, Highgate, N.

1873 Elsey, John Green, J.P.,
Morant House, Addison-road Kensington, W.

1873 Emanuel, Lewis,
36, *Finsbury-circus, E.C.*

1877 Emmott, W. T.,
Newfield House, near Lymm, Cheshire.

1882 Essex, Benjamin Smily,
446, *Strand, W.C.*

1879 Evans, Henry Jones, J.P.,
Brecon Old Bank, Cardiff.

1880 Evans, Henry Russell,
Newport, Monmouth.

1875 Everett, The Hon. H. Sidney, M.A.,
United States Legation, 4, *Alsenstrasse, Berlin.*

Year of Election.	
1834	Eversley, The Right Hon. Viscount, D.C.L., LL.D., 114, *Eaton-square, S.W.; and Winchfield, Hants.*
1875	Faraday, Frederick J., 17, *Brazenose-street, Manchester.*
1874	Farmer, James, 6, *Porchester-gate, Hyde Park, W.*
1868	Farrell, John Douglas, *Bank of England, West Branch, Burlington-gardens, W.*
1878	Farren, George, M.I.C.E., *Carnarvon.*
1878	Farrer, Thomas Henry, *Board of Trade, Whitehall, S.W.*
1876	Fearnside, Henry, M.B., F.R.C.P., 52, *Oxford-terrace, Hyde Park, W.*
1882	Fell, Arthur, M.A., 5, *Pembroke-road, Kensington, W.*
1864	Fellows, Frank P., 8, *The Green, Hampstead, N.W.*
1874	Ferguson, A.M., "*Ceylon Observer*" *Office, Colombo, Ceylon.*
1880	Finch, George Henry, M.P., *Burley-on-the-hill, Oakham.*
1880	Finlaison, Alexander John, F.I.A., 19, *Old Jewry, E.C.*
1880	Finlay, George, *London and N. Western Railway, Euston Station, N.W.*
1882	Foley, P. J., *Pearl Ins. Co., Adelaide-place, London Bridge, E.C.*
1878	Follett, Charles John, M.A., B.C.L., *H.M. Custom House, E.C.*
1875	Fordham, Edward King, J.P., *The Bury, Ashwell, Baldock, Herts.*
1841	Fortescue, The Right Honourable Earl, *Castle Hill, South Molton, Devon.*
1877	*Fowler, Alderman Robert Nicholas, M.P., 50, *Cornhill, E.C.; and Elm Grove, Corsham, Wilts.*
1868	Fowler, William, M.P., 38, *Grosvenor-square, S.W.*
1878	Foxwell, Herbert Somerton, M.A., *St. John's College, Cambridge.*
1879	Francis, George Edward, *Staunton Coleford, Gloucestershire.*
1882	Fraser, D. Manson, M.A., M.D., *Metropolitan Fever Hospital, Homerton, E.*
1844	*Freeland, Humphrey William, J.P., *Athenæum Club, S.W.; and Chichester.*

Year of Election	
1876	Freeman, Joseph, *Lawn Villa*, 74, *Acre-lane*, *Brixton*, *S.W.*
1876	Freeman, T. Kyffin, *c/o R. Scarlett*, *Esq.*, 9, *King Edward-street*, *E.C.*
1878	Fuller, W. Palmer, 50, *Gresham-street*, *E.C.*
1879	Gairdner, Charles, *Broom*, *Newton Mearns*, *Renfrewshire.*
1881	Gale, James Thomas, 10, *Kersley-street*, *Battersea-park*, *S.W.*
1882	Gallenga, A., *The Falls*, *Llandogo*, *Coleford*, *Gloucester.*
1852	Galsworthy, Edwin Henry, J.P., F.I.A., 18, *Park-crescent*, *Portland-place*, *W.*
1873	*Galton, Capt. Douglas, R.E., C.B., F.R.S., 12, *Chester-street*, *Grosvenor-place*, *S.W.*
1860	Galton, Francis, F.R.S., F.R.G.S., 42, *Rutland-gate*, *S.W.*
1878	Gardiner, Henry J., *Hurstmead*, *Eltham*, *Kent.*
1881	Garnett, Frederick Brooksbank, *Board of Inland Revenue*, *Somerset House*, *W.C.*
1881	Garraway, The Hon. David G., (*Acting Treasurer*), *Grenada*, *West Indies.*
1879	*Gassiot, John Peter, J.P., *The Culvers*, *Carshalton*, *Surrey*,
1872	Gastrell, Major-General J. E., 7, *Lansdowne-road*, *Wimbledon*, *S.W.*
1880	*Gates, John B., jun., A.C.A., 99, *Gresham-street*, *E.C.*
1874	Gatliff, Charles, 8, *Finsbury-circus*, *E.C.*
1881	*Gatty, William Henry, *Market Harborough*, *Leicestershire.*
1877	Gawith, Richard Jackson, M.R.C.S., 23, *Westbourne-park-terrace*, *Paddington*, *W.*
1872	Gibb, Thomas Eccleston, 16, *Lady Margaret-road*, *N.W.*
1874	Gibbs, Alban George Henry, 82, *Portland-place*, *W.*
1871	Gibbs, George Sleight, *Derry Lodge*, *Darlington.*
1882	Gibbs, Richard, 14, *Holland-park*, *W.*

Year of Election.	
1867	*Giffen, Robert (*President*), 44, *Pembroke-road*, *Kensington*, *W.*
1877	Gilbert, William H. Sainsbury, 9, *Old Jewry*, *E.C.*
1878	*Glanville, S. Goring, 238, *Lewisham High-road*, *S.E.*
1860	Glover, John, 88, *Bishopsgate-street Within*, *E.C.*
1877	Goddard, Frederick Robertson, 19, *Victoria-square*, *Newcastle-on-Tyne.*
1877	Good, Alfred, (7, *Poultry*, *E.C.*), *Downe Lodge*, *by Beckenham*, *Kent.*
1880	Goodhart, Charles E., *Langley-park*, *Beckenham*, *Kent.*
1881	Goodrich, S. G., 81, *Cheapside*, *E.C.*
1868	Göschen, The Right Hon. George Joachim, M.P, 69, *Portland-place*, *W.*
1855	*Gosset, John Jackson, *Thames Ditton*, *Surrey.*
1853	Gover, William Sutton, F.I.A., 4, *Queen-street-place*, *Southwark Bridge*, *E.C.*
1876	Grahame, James, C A., 12, *St. Vincent-place*, *Glasgow.*
1879	Grant, Daniel, M.P., 12, *Cleveland-gardens*, *Bayswater*, *W.*
1875	Granville, Joseph Mortimer, M.D., F.G.S., &c., 18, *Welbeck-street*, *Cavendish-square*, *W.*
1847	Gray, Thomas, 34, *Fenchurch-street*, *E.C.*
1877	Greene, William Thomas, M.A., M.D.. *Moira House*, *Peckham Rye*, *S.E.*
1881	Greening, William H., *Braithwaite-road*, *Birmingham.*
1868	Griffith, Edward Clifton, 1, *Waterloo-place*, *S.W.*
1882	Griffiths, Ebenezer, 166, *St. John's-road*, *Hornsey Rise.*
1875	Gunn, Arthur, *Metropolitan Board of Works*, *Spring-gardens*, *S.W.*
1878	Guthrie, Charles, *London Chartered Bank of Australia*, *Melbourne*, *Victoria.*
1877	Gutteridge, Richard Sandon, M.D., 58, *Brook-street*, *Grosvenor-square*, *W.*
1839	Guy, William Augustus, M.B., F.R.C.P., F.R.S., (*Honorary Vice-President*), 12, *Gordon-street*, *Gordon-square*, *W.C.*
1880	*Gwynne, J. Eglinton A., J.P., F.S.A., 97, *Harley-st.*, *W.* ; *Folkington Manor*, *Polegate*, *Sussex.*

Year of Election.

1873 *Haggard, Frederick T.,
The Grove, East Burnham, near Slough.

1876 Hall, Edward Algernon,
131, *Piccadilly, W.*

1876 Hall, Edward Hepple, F.R.A.S., &c.,
1, *Cecil-street, Strand, W.C.*

1869 Hall, James Macalester,
Killean House, Tayinloan, Argyleshire.

1878 Hallett, T.G.P., M.A.,
Claverton Lodge, Bath.

1873 Hamilton, The Right Hon. Lord George Francis, M.P.,
17, *Montagu-street, Portman-square, W.*

1882 Hamilton, John,
Junior Carlton Club, Pall Mall, S.W.

1882 Hamilton, John James,
The Grange, Chislehurst.

1879 Hamilton, Rowland,
Oriental Club, Hanover-square, W.

1873 Hanbury, Robert William,
Ham Hall, Ashbourne, Derbyshire.

1869 Hancock, William,
35, *Cornhill, E.C.*

1879 Hancock, William Neilson, LL.D., Q.C., M.R.I.A., (*President of the Statistical and Social Inquiry Society of Ireland*),
43, *Upper Gardiner-street, Dublin.*

1875 Hankey, Ernest Alers,
Elmhurst, Bickley-park, Kent.

1879 Hankey, Thomson,
59, *Portland-place, W.*

1861 Hannyngton, Major-General John Caulfield, F.I.A.,
India Office, Westminster, S.W.

1876 Hansard, Luke,
68, *Lombard-street, E.C.*

1871 *Harcourt, Right Hon. Sir William Vernon, Q.C., M.P., F.R.S.,
7, *Grafton-street, Bond-street, W.*

1877 Harding, Charles, M.R.S.L., F.R.G.S.,
7, *Bank Buildings, E.C.*

1877 Harold, Frederick Richard,
19, *Lambton-road, Hornsey Rise, N.*

1878 Harper, W. P.,

1868 Harris, David,
Caroline Park, Granton, Edinburgh.

1882 Harris, Frederick,
De Beaufort Villa, Mornington-road, Leytonstone, E.

1882 Harris, William James,
75, *Linden-gardens, Bayswater, W.*

1870 Hartley, Fountain John,
Gloucester House, 97, *Cazenove-road, Upper Clapton, N.*

Year of Election.	
1881	HARVEY, ALFRED SPALDING, B.A., 67, *Lombard-street, E.C.*
1880	Hastings, George Woodyatt, M.P., *Barnard's-green House, near Malvern.*
1876	Hawkins, Alfred Templeton, F.R.G.S., 22, *Budge-row, Cannon-street, E.C.*
1879	Hawksley, Thomas, C.E., F.R.S., &c., 30, *Great George-street, Westminster, S.W.*
1880	Hazell, Walter, *Ellerslie, Bromley, Kent.*
1877	Hedley, Thomas Fenwick, 12, *Park-place, West, Sunderland.*
1870	Hefford, George V., *Rugby.*
1860	Helder, Stewart, F.I.A., 2, *Broad Sanctuary, S.W*
1865	Hendriks, Augustus, F.I.A., 7, *Cornhill, E.C.*
1855	*HENDRIKS, FREDERICK, 1, *King William-street, E.C.*
1858	Herapath, Spencer, F.G.S., 18, *Upper Phillimore-gardens, W.*
1877	*Herbage, William, *London & South Western Bank*, 7, *Fenchurch-street, E.C.*
1881	Hewat, Archibald, F.I.A., F.F.A., 122, *St. Vincent-street, Glasgow.*
1834	*HEYWOOD, JAMES, M.A., F.R.S., F.G.S., (*Honorary Vice-President and Trustee*), 26, *Palace-gardens, Kensington, W.; Athenæum Club, S.W.*
1869	Hickson, Joseph, J.P., *Montreal, Canada.*
1875	Higham, Charles Daniel, F.I.A., 3, *Princes-street, Bank, E.C.*
1878	Hill, Frederick Morley, 22, *Richmond-road, Barnsbury, N.*
1873	Hime, Major H. W. L., R.A., *Woolwich.*
1859	Hincks, Hon. Sir Francis, K.C.M.G., C.B., *Montreal, Canada.*
1879	Hoare, Hamilton Noel, 37, *Fleet-street, E.C.*
1870	*Hoare, Henry, *Staplehurst, Kent.*
1834	*Hodge, William Barwick, F.I.A., 5, *Whitehall, S.W.*
1877	Holmes, Richard Henry, *Elswick-villa, Rye Hill, Newcastle-on-Tyne.*
1874	Hood, Charles, F.R.S., F.R.A.S., 10, *Leinster-gardens, Hyde-park, W.*

Year of Election.

1871 Hooper, Augus Cameron,
Montreal, Canada.

1874 Hooper, Rev. George D.,
"*Ellerslie*," *Sunny Gardens, Hendon, N.W.*

1879 Hooper, George Norgate,
Elmleigh, Hayne-road, Beckenham, Kent.

1878 Hooper, Wynnard,
2, *Pembroke-gardens, Kensington, W.*

1855 Houghton, The Right Hon. Lord, D.C.L. F.R.S.,
(*Honorary Vice-President*),
Fryston Hall, Ferrybridge, Yorkshire.

1876 Hoyle, William,
Claremont, Tottington, near Bury, Lancaster.

1853 *Hubbard, The Right Hon. John Gellibrand, M.P.,
Bank of England, E.C.

1864 Hudson, Thomas,
Argos Villa, St. Andrew's Park, Bristol.

1880 Huggard, Wm. R., M.A., M.D., M.R.C.P., Lond.,
Sussex House, Hammersmith, W.

1878 Hughes, John,
3, *West-street, Finsbury-circus, E.C.*

1872 Humphreys, George, M.A., F.I.A.,
79, *Pall Mall, S.W.*

1874 Humphreys, Noel Algernon,
General Register Office, Somerset House, W.C.

1873 Hunt, Sir Henry Arthur, C.B.,
54, *Eccleston-square, S.W.*

1857 Hurst, George,
King's Brook House, St. Mary's, Bedford.

1877 Huskinson, Thomas,
Epperstone Manor, Nottingham.

1879 Hyde, Major-General Henry, R.E.,
India Office, Westminster, S.W.

1866 Ince, Henry Bret, Q.C.,
18, *Old-square, Lincoln's-inn, W.C.*

1869 Ingall, Samuel, F.R.G.S.,
Kent-end, Forest-hill, Kent, S.E.

1874 *Ingall, William Thomas Fitzherbert Mackenzie,
50, *Threadneedle-street, E.C.*

1869 *Inglis, Cornelius, M.D.,
Athenæum Club, S.W.

1839 Irving, John,
94, *Eaton-place, S.W.*

1878 Isaacs, Michal Babel,
35, *Leinster-square, Bayswater, W.*

Year of Election.	
1864	*Ivey, George Pearse, *Tyle Morris, Briton Ferry.*
1880	*Jackson, William Lavies, M.P., *Chapelallerton, Leeds.*
1879	Jamieson, George Auldjo, 58, *Melville-street, Edinburgh.*
1872	Janson, Frederick Halsey, F.L.S., 41, *Finsbury-circus, E.C., and Oak Bank, Chislehurst.*
1878	Jeans, James Stephen, *Victoria Mansions, Victoria-street, Westminster, S.W.*
1879	Jephson, Henry L. (*Chief Secretary's Office*), *Dublin Castle, Ireland.*
1881	*Jersey, The Right Hon. the Earl of, 3, *Great Stanhope-street, W.*
1881	Johnson, E. Eltham, 110, *Cannon-street, E.C.*
1871	Johnson, Edmund, 1, *Castle-street, Holborn, E.C.*
1880	Johnson, Walter, *Rounton Grange, Northallerton.*
1872	Johnston, Francis J., *Lamas, Chislehurst.*
1881	Johnston, Rev. James, *Gleneve, Highland-road, Upper Norwood, S.E.*
1878	Johnstone, E., 14, *Abbeville-road, Cavendish-road, Clapham, S.W.*
1878	Jones, Henry R. Bence, 1, *Whitehall, S.W.*
1874	Jones, Herbert, 15, *Montpelier-row, Blackheath, S.E.*
1882	Jones, John, 12A, *King Edward's-road, Hackney, E.*
1880	Jones, Robert Hesketh, *The Briars, Crystal Palace Park, Sydenham, S.E.*
1877	Jones, Theodore Brooke, *Georgeville, Harrogate, Yorks.*
1873	Jones, Sir Willoughby, Bart., M.A., *Cranmer Hall, Fakenham, Norfolk.*
1858	Jourdan, Francis, *Avenue House, Hampstead, N.W.*

Year of Election.	
1877	Karuth, Frank O., *City Liberal Club, Walbrook, E.C.*
1873	Kay, Duncan James, 60, *Queen's-gate, S.W.*
1877	Kealy, James William, 26, *Moorgate-street, E.C.*
1874	Kelly, Charles, M.D., *Worthing, Sussex.*
1867	Kelly, Edward Robert, A.M., 51, *Great Queen-street, Lincoln's-inn-fields, W.C.*
1878	Kelsey, Joseph Francis, *Government Statistician, Mauritius.*
1873	Kemp, Samuel, *Oriel House, Bath.*
1878	Kennedy, J. Murray, *New University Club, St. James's-street, S.W.*
1878	Kennedy, Thomas, 11, *Old Jewry-chambers, E.C.*
1852	Kimberley, The Right Honourable the Earl of, M.A., P.C., 35, *Lowndes-square, S.W.*
1878	King-Harman, Edward Robert, *Rockingham, Boyle, Ireland.*
1879	Kirkwood, Anderson, LL.D., *Melville-terrace, Stirling, N.B.*
1872	Knight, John Peake, *London, Brighton, & S. Coast Rail., London Bridge, E.C.*
1878	*Kusaka, Yoshio, *First National Bank, Tokio, Japan.*
1869	Kyshe, John Benjamin, 7, *Royal Avenue, Chelsea.*
1880	Lamprey, Joshua Henry, 17, *St. Anne's-park, Wandsworth, S.W.*
1875	Lane, Thomas, *Percy Cottage, Eastbourne.*
1874	Lang, George Murray, R.N., 18, *Cheyne-walk, Chelsea, S.W.*
1881	Langton, Henry Currer, *Docklands, Ingatestone, Essex.*
1878	Law, The Right Hon. Hugh, 9, *Fitzwilliam-square, Dublin.*
1874	Lawes, Sir John Bennett, Bart., LL.D., F.R.S., F.C.S., *Rothamsted-park, St. Albans.*
1877	Lawrance, Henry, 3, *Endsleigh-gardens, Euston-square, N.W.*

Year of Election.	
1878	Lawrence, Alexander M., 17, *Thurlow-road, Hampstead, N.W.*
1873	Lawrie, James, F.R.G.S., *Kelvin House, Quadrant-road, Highbury*, N.
1873	Lawson, Robert, (*Vice-President, Inspector-General of Army Hospitals*), 20, *Lansdowne-road, Notting-hill, W.*
1873	Lea, Thomas, M.P., 14, *Elvaston-place, Queen's-gate, S.W.*
1880	Lee, Lionel Frederic, (*Ceylon Civil Service*), *c/o H. Austin Lee, Foreign Office, Downing-street, S.W.*
1879	*Leete, Joseph, 36, *St. Mary-at-hill, E.C.* (*Eversden, S. Norwood Park.*)
1877	Lefevre, The Right Hon. George Shaw, M.P., (*Honorary Vice-President*), 18, *Bryanston-square, W.*
1877	*Leggatt, Daniel, LL.D., 5, *Raymond-buildings, Gray's-inn, W.C.*
1880	Leighton, Stanley, M.P., *Sweeney Hall, Oswestry, Salop.*
1851	Levi, Professor Leone, LL.D., F.S.A., 5, *Crown Office-row, Temple, E.C.*
1867	Lewis, Charles Edward, M.P., 8, *Old Jewry, E.C.*
1877	Lewis, John, 1, *Temple-row West, Birmingham.*
1862	Lewis, Robert, 1, *Bartholomew-lane, E.C.*
1877	Ligertwood, Thomas, M.D., F.R.C.S., *Royal Hospital, Chelsea, S.W.*
1845	*Lister, William,
1834	Lloyd, John Horatio, 100, *Lancaster-gate, Hyde-park, W.*
1878	Lloyd, Thomas, 4, *Huddlestone-road, Tufnell-park, N.*
1879	Lloyd, Wilson, F.R.G.S., *Myvod House, Wood-green, Wednesbury.*
1882	*Longstaff, George Blundell, M.A., M.B., *Southfield Grange, West Hill-road, Wandsworth, S.W.*
1876	*Lornie, John Guthrie, J.P., *Rosemount, Kirkcaldy; (of Birnam and Pitcastle) N.B.*
1879	Lovegrove, Mrs., 28, *Park-street, Grosvenor-square, W.*
1880	Lovegrove, Joseph, 28, *Park-street, Grosvenor-square, W.*
1834	Lovelace, The Right Honourable the Earl of, F.R.S., *East Horsley Park, Ripley, Surrey.*
1880	Lovely, William, R.N., *Avenue House, Hammersmith, S.W.*
1879	Lowndes, William Layton, J.P., D.L., *Linley Hall, Broseley, Shropshire.*

Year of Election.	
1875	Loyd, William Jones, J.P., 16, *Grosvenor-place, S.W., and Langleybury, Watford.*
1865	Lubbock, Sir John, Bart., M.P., F.R.S., (*Trustee*), *High Elms, Farnborough, Kent.*
1882	Lubbock, Nevile, *Leesons, Chislehurst, Kent.*
1878	Lucas, Thomas, J.P., 5, *Great George-street, Westminster, S.W.*
1878	Lusk, Sir Andrew, Bart., M.P., J.P., 16, *Hyde-park-street, W.*
1881	Lytton, The Right Hon. Earl of, G.C.B., G.C.S.I., *Knebworth, Stevenage, Herts.*
1875	Mabson, Richard Rous, *Ilford, Essex.*
1873	*Macandrew, William, J.P., *Westwood, near Colchester.*
1873	McArthur, Alexander, M.P., *Raleigh Hall, Brixton, S.W.*
1873	McArthur, Alderman Sir William, K.C.M.G., M.P., 1, *Gwydyr Houses, Brixton Rise, S.W.*
1879	MacCarthy, Rev. E. F. M., M.A., 47, *Hagley-road, Edgbaston, Birmingham.*
1867	M'Clean, Frank, 23, *Great George-street, Westminster, S.W.*
1873	McDermott, Edward, *Hill Side, Grove-park, Camberwell, S.E.*
1881	Macdonald, Charles McCay, 9, *Dowgate-hill, E.C.*
1872	Macdonell, John, 4, *Pump-court, Temple, E.C.*
1873	*McEwen, Laurence T., *c/o R. A. McLean*, 1, *Queen Victoria-street, E.C.*
1873	McGarel-Hogg, Colonel Sir James, Bart., M.P., 17, *Grosvenor-gardens, S.W.*
1882	McGuire, Patrick, C.E., 57, *Amherst-street, Calcutta.*
1879	MacIver, David, M.P., 34, *Lancaster-gate, W.*
1878	McKewan, William, 21, *Lombard-street, E.C.*

Year of Election.	
1881	Mackey, Rev. Canon Donald J., B.A., Cantab *The Chantry, Balhousie, Perth, N.B.*
1870	Maclagan, David, 22, *George-street, Edinburgh.*
1876	*McLean, Robert Allan, F.R.G.S., 1, *Queen Victoria-street. E.C.*
1863	*Maclure, J. W., J.P., &c., *Carlton Club; The Home, Whalley Range, Manchester.*
1875	Macpherson, Hugh Martin, F.R.C.S., (*Inspector-General*), 14, *St. James's-square, S.W.*
1882	McRosty, Alexander, 13, *King's Arms-yard, E.C.; West Bank, Esher.*
1880	Maddison, Edward C., 31, *Lombard-street, E.C.*
1877	*Maple, John Blundell, 8, *Clarence-terrace, Regent's-park, N.W*
1875	Marsh, Alfred, 85, *Gracechurch-street, E.C.*
1880	*Marshall, A., 31, *Apsley-road, Clifton, Bristol.*
1865	Martin, Frederick, 22, *Lady Margaret-road, N.W.*
1873	Martin, Henry, *National Bank of India*, 39*a*, *Threadneedle-street, E.C.*
1874	*Martin, John Biddulph, M.A., F.Z.S., (*Foreign Secretary*), 6B, *The Albany, Piccadilly, W.*
1877	Martin, Josiah, F.I.A., 32, *New Bridge-street, E.C.*
1872	*Martin, Richard Biddulph, M.P., (*Treasurer*), 68, *Lombard-street, E.C., and Chislehurst.*
1876	Martin, Thomas Jaques, 84, *Collins-street West, Melbourne, Victoria.*
1879	Martin, Waldyve A. Hamilton, *The Elms, Coates, Cirencester.*
1875	*Mathers, John Shackleton, *Hanover House, Leeds, Yorkshire.*
1870	Maxse, Rear-Admiral Frederick A., *Herm House, Upperton-road, Eastbourne.*
1874	May, Frank, *Bank of England, Threadneedle-street, E.C.*
1882	Medhurst, J. T., 126, *Narrow-street, Limehouse, E.*
1853	*Meikle, James, F.I.A., 6, *St. Andrew's-square, Edinburgh.*
1880	Menzies, R. Stewart, *Hallyburton, Coupar-Angus, N.B.*
1878	Merrick, Alfred Benjamin, 10, *Brystock-terrace, St. David's, Exeter.*
1861	Messent, John, F.I.A., 429, *West Strand, W.C.*

Year of Election.	
1881	Meyer, Robert Alexander, 40A, *Queen's Mansions, Victoria-st., Westminster, S.W.*
1877	Michael, William H., Q.C., 38, *Parliament-street, S.W.*
1875	Mildmay, Henry Bingham, J P., 8, *Bishopsgate-street Within, E.C.*
1873	Millar, William Henry, *Cleveland Lodge, New Park-road, Brixton-hill, S.W.*
1877	Miller, Robert Ferguson, *Ramsden-square, Barrow-in-Furness.*
1879	Miller, William, 67, *Queen Victoria-street, E.C.*
1878	Mills, Sir Charles Henry, Bart., M.P., *Camelford House, Park-lane, W.*
1882	Milnes, Alfred, M.A., 30, *Almeric-road, Wandsworth, S.W.*
1874	*Mocatta, Frederick D., F.R.G.S., 9, *Connaught-place, W.*
1878	Moffat, Robert J., *The Chesnuts, Great Shelford, Cambridgeshire.*
1879	Moore, Alfred, C.E., 5, *Clarence-street, Manchester.*
1874	Moore, Charles Rendall, 67, *Montpelier-road, Peckham, S.E.*
1877	Moore, Edward, 3, *Crosby-square, E.C.*
1878	*Moore, John Byers Gunning, *Loymount, Cookstown, Ireland.*
1880	More, Robert Jasper, *Linley Hall, Bishopscastle, Salop.*
1872	Morgan, Octavius Vaughan, J.P., 13, *Boltons, South Kensington, S.W.*
1881	Morison, Arthur Duff, 31, *Lombard-street, E.C.*
1873	*Morley, Samuel, M.P., 18, *Wood-street, E.C.;* 34, *Grosvenor-street, W.*
1874	*Morris, James, M.D., F.R.C.S., 13, *Somers-place, Hyde-park-square, W.*
1877	Mort, William, 1, *Stanley-crescent, Notting-hill, W.*
1873	Morton, James, 1, *Palmerston-buildings, Greenock, N.B.*
1847	*Mouat, Frederic J., M.D., F.R.C.S., 12, *Durham-villas, Kensington, W.*
1857	*Mount-Temple, The Right Hon. Lord, 15, *Great Stanhope-street, W.*
1878	Muir, Hugh Brown, 26, *Old Broad-street, E.C.*
1880	Mulhall, Michael G., 81, *Park-street, Grosvenor-square, W.*

Year of Election.	
1878	*Mundella, The Right Hon. Anthony John, M.P., F.R.S., 16, *Elvaston-place, Queens-gate, S.W.*
1878	Murray, Adam, 104, *King-street, Manchester.*
1879	Murray, James Charles, *Calcutta.*
1879	Nalder, Francis Henry, *Findern Lodge, Spring-grove, Isleworth.*
1865	Nasmith, David, 4, *Garden-court, Temple, E.C.*
1878	*Nathan, Henry, 110, *Portsdown-road, Maida-vale, W.*
1879	Neil, William M., 64, *Seymour-street, Portman-square, W.*
1854	Neild, Alfred, *Mayfield Print Works, Manchester.*
1869	Neison, Francis G. P., 93, *Adelaide-road, South Hampstead, N.W.*
1879	Nepean, Evan Colville, *War Office, Pall Mall, S.W.*
1877	Nevill, Charles Henry, 11, *Queen Victoria-street, E.C.*
1862	Newbatt, Benjamin, F.I.A., F.R.G.S., 13, *St. James's-square, S.W.*
1881	Newcome, Frederick N., 74, *Claverton-street, St. George's-square, S.W.*
1879	Newdegate, Charles Newdigate, M.P., D.C.L., 27, *Lowndes-street, Belgrave-square, S.W.*
1878	Newport, Henry R., 1, *Whitehall, S.W.*
1878	Newton, John, *Ash Lea, Croydon-road, Penge, S.E*
1878	Nicholson, J. S. (*Professor of Political Economy*), *University of Edinburgh.*
1858	Nightingale, Miss Florence, 10, *South-street, Park-lane, W.*
1877	Nix, Samuel Dyer, F.C.A., 3, *King-street, Cheapside, E.C.*
1871	*Noble, Benjamin, *North-Eastern Bank, Newcastle-on-Tyne.*
1870	Noble, John, 42, *Burghley-road, Highgate-road, N.W.*
1877	Norman, General, Sir Henry Wylie, K.C.B., 27, *Lexham-gardens, Cromwell-road, W.*

Year of Election.

1878 Northbrook, The Right Hon. the Earl of, G.C.S.I., D.C.L.,
4, *Hamilton-place, Piccadilly, W.*

1878 Notthafft, Theodor,
c/o Discount Bank, St. Petersburg.

1880 Oakeshott, George Alfred,
Secretary's Office, General Post Office, E.C.

1880 *Oelsner, Isidor,
Highfield, Westwood-park, Forest-hill, S.E.

1862 Ogbourne, Charles Henry,
29, *Dalhousie-square, Calcutta.*

1878 O'Hagan, The Right Hon. Lord,
19, *Chesham-place, S.W.*

1878 Oppenheim, Henry,
17, *Park-lane, Piccadilly, W.*

1876 Orange, William, M.D.,
Broadmoor, Wokingham, Berks.

1877 Ormond, Richard,
24, *Grainger-street West, Newcastle-on-Tyne.*

1874 Overall, William Henry, F.S.A.,
Librarian, Guildhall, E.C. (*Representing the Library Committee of the Corporation of the City of London.*)

1834 *Overstone, The Right Honourable Lord, F.R.G.S.,
(*Honorary Vice-President*),
2, *Carlton-gardens, S.W.*

1866 *Palgrave, Robert Harry Inglis, J.P., F.R.S.,
11, *Britannia-terrace, Great Yarmouth, Norfolk.*

1879 Palmer, George, M.P., (*The Acacias, Reading*),
68, *Grosvenor-street, W.*

1878 Park, David Francis, C.A., F.F.A., A.I.A.,
17, *Change-alley, Cornhill, E.C.*

1880 Parkin, William,
The Mount, Sheffield.

1881 Parr, Samuel,
7, *Finsbury-square, E.C.*

1878 Parry, Thomas,
Grafton-place, Ashton-under-Lyne.

1879 Partridge, Henry Francis, L.D.S., &c.,
Sussex House, Sussex-place, South Kensington, S.W.

1869 Patterson, Robert Hogarth,
22, *Wingate-road, Hammersmith, W.*

Year of Election.	
1877	Paul, Henry Moncreiff, 12, *Lansdowne-crescent, Notting Hill, W.*
1878	Paulin, David, 31, *Stafford-street, Edinburgh.*
1879	Payn, Howard, 21, *Gilbert-street, Grosvenor-square, W.*
1873	Pearce, Charles William, 1, *Sherborne-lane, E.C.*
1876	Pearson, Edwin James, *Board of Trade, Whitehall, S.W.*
1857	*Pearson, Professor C. H., *c/o* John Pearson, Q.C., 75, *Onslow-square, S.W.*
1880	*Pease, Sir Joseph Whitwell, Bart., M.P., 24, *Kensington-palace-gardens, W.*
1876	*Peek, Sir Henry William, Bart., M.P., *Wimbledon House, S.W.*
1878	Pellereau, Etienne, *Procureur and Advocate-General, Port Louis, Mauritius.*
1880	Pender, John, M.P., (66, *Old Broad-street, E.C.*) 18, *Arlington-street, S.W.*
1871	Pennington, Frederick, M.P., 17, *Hyde Park-terrace, W.*
1874	Pepys, The Hon. George,
1881	Perring, R. B., *Queen's Chambers, John Dalton-street, Manchester.*
1874	Phené, John Samuel, LL.D., F.S.A., 5, *Carlton-terrace, Oakley-street, S.W.*
1879	Philips, Herbert, 35, *Church-street, Manchester.*
1877	Phillipps, Henry Matthews, 41, *Seething-lane, E.C.*
1835	*Phillips, Sir George Richard, Bart., 22, *Hill-street, Berkeley-square, W.*
1859	Phillips, Henry James, 4, *Ludgate-hill, E.C.*
1877	Phillips, John Walter, M.B., L.R.C.S. Edin., 30, *Stanley-street, West Melbourne, Victoria.*
1878	Phipps, Pickering, M.P., 6, *Collingtree Grange, Northampton.*
1871	*Pickering, John, F.R.G.S., F.S.A., *Stoney Royd, Ilkley, Yorkshire.*
1873	Pickstone, William, *Maesmynan Hall, Holywell.*
1878	*Pim, Joseph Todhunter, *Greenbank, Monkstown, County Dublin.*
1838	*Pinckard, George Henry, J.P., F.I.A., 12, *Grove-road, St. John's-wood, N.W.*
1879	Pixley, Francis William, 5, *Upper Westbourne-terrace, Hyde Park, W.*

Year of Election.

1881 Planck, Charles, M.R.C.S. (*Deputy Surgeon-General*), *Allahabad, India.*

1861 Plowden, W. Chicele (*Census Commissioner for India*), 70, *Home Office, Clacutta.*

1869 Pochin, Henry Davis, *Bodnant Hall, Eglwysbach, R.S.O. Denbighshire.*

1874 Ponsonby, The Hon. Frederick George Brabazon, M.A., 3, *Mount-street, Grosvenor-square, W.*

1860 Potter, Edmund, F.R.S., 64, *Queen's-gate, South Kensington, S.W.*

1879 *Powell, Francis Sharp, F.R.G.S., (*Horton Old Hall, Bradford*), 1, *Cambridge-square, Hyde Park, W.*

1871 Power, Edward, 16, *Southwell-gardens, South Kensington, S.W.*

1877 *Prance, Reginald Heber, *Frognal, Hampstead, N.W.*

1877 Praschkauer, Maximilian, *Elgin House, Knockholt, Kent.*

1867 *Pratt, Robert Lindsay, 80, *Bondgate, Darlington*

1877 Preen, Harvey Edward, *Kidderminster.*

1849 Presant, John, 13, *St. James's-square, S.W.*

1879 Price, James, F.R.G.S., 53, *Redcliffe-gardens, South Kensington, W.*

1871 Puleston, John Henry, M.P., 2, *Bank-buildings, E.C.*

1837 *Purdy, Frederick, 35, *Victoria-road, Kensington, W.*

1879 Quail, Jesse, 27, *Mill-street, Whitehaven.*

1874 Quain, Richard, M.D., F.R.S., F.R.C.P., 67, *Harley-street, W.*

1872 *Rabino, Joseph, (*care of Crédit Lyonnais*), *Alexandria, Egypt.*

1858 *Radstock, The Right Honourable Lord, *East Sheen, Mortlake, S.W.*

1877 Raikes, Captain George Alfred, F.S.A., F.R. His. Soc., 63, *Belsize-park, Hampstead, N.W.*

Year of Election.

1864 *Raleigh, Samuel,
9, *St. Andrew-square, Edinburgh.*

1860 Ramsay, Alexander Gillespie, F.I.A.,
Canada Life Assurance, Hamilton, Canada West.

1874 Ramsden, Sir James, of Barrow, D.L.,
Furness Abbey, Lancashire.

1879 Ranken, William Bayne,

1880 Rankin, James, M.P.,
35, *Ennismore-gardens, Prince's Gate, S.W.*

1881 Raper, Robert George,
Chichester.

1865 Ratcliff, Colonel Charles, J.P.,
26, *Lancaster-gate, Hyde Park, W.*

1859 Rathbone, P. H.,
Greenbank Cottage, Liverpool.

1878 Rathbone, William,
18, *Prince's-gardens, Prince's-gate, S.W.*

1874 *Ravenstein, Ernest George, F.R.G.S.,
29, *Lambert-road, Brixton Rise, S.W.*

1877 *Rawlins, Thomas,
45, *King William-street, E.C.*

1870 Rawlinson, Robert, C.B.,
11, *Boltons, West Brompton, S.W.*

1835 Rawson, Sir R. W., C.B., K.C.M.G. (*Vice-President*),
68, *Cornwall-gardens, Queen's-gate, S.W.*

1880 Readdy, George,
13, *Harrington-street, Liverpool.*

1875 Record, John,
23, *Kenninghall-road, Clapton, E.*

1856 Redgrave, Alexander, C.B.,
Factory Inspectors' Office, Whitehall, S.W.

1879 Rhodes, John G.,
Oakdene, Beckenham, Kent.

1876 Rice, Thomas Fitzroy,
Horseheads, New York, U.S.A.

1873 Ripon, The Most Hon. the Marquess of, K.G., F.R.S, &c.,
1, *Carlton-gardens, S.W.*

1880 Roberts, A. F.,
49, *Bow-lane, Cheapside, E.C.*

1882 Roberts, Edward, F.R.A.S., (*Nautical Almanac Office*),
3, *Verulam-buildings, Gray's Inn, W.C.*

1868 Robinson, Sir William Rose, K.C.S.I.,
50, *Norfolk-square, Hyde-park, W.*

1880 *Ronald, Byron L.,
14, *Upper Phillimore-gardens, W.*

1880 Ronald, Robert Bruce,

1873 *Rosebery, The Right Hon. the Earl of,
107, *Piccadilly, W.*

Year of Election.

1834 *Ross, David, of Bladensburg,
Rostrevor, Co. Down, Ireland.

1880 Roth, Henry Ling,
Foulden, Mackay, Queensland, Australia.

1865 Ruck, George T.,
The Hawthorns, Dorville-road, Lee, S.E.

1879 Runtz, John,
Linton Lodge, Lordship-road, Stoke Newington, N.

1878 Russell, Richard F.,
8, *John-street, Adelphi, W.C.*

1874 Rutherford, Charles,
12, *Queen-street, E.C.*

1873 *Salisbury, The Most Hon. the Marquess of, P.C., F.R.S.,
20, *Arlington-street, W.*

1881 Salmon, James,
Melford Lodge, Wanstead, Essex.

1875 *Salomons, Sir David Lionel, Bart., J.P.,
Broom-hill, Tunbridge Wells.

1876 Salt, Thomas, M.P.,
Weeping Cross, Stafford.

1868 Samuelson, Bernhard, M.P.,
56, *Prince's-gate, Hyde-park, S.W.*

1860 Sargant, William Lucas,
Edgbaston, Birmingham.

1877 Saunders, Charles Edward, M.D.,
21, *Lower Seymour-street, Portman-square, W.*

1874 Saunders, Francis,
6, *Limes-grove, Lewisham, S.E.*

1852 Saunders, James Ebenezer, jun., F.G.S.
9, *Finsbury-circus, E.C.*

1879 Saunders, William,
Mount View, Streatham, S.W.

1877 Schiff, Charles,

1877 Schneidau, Charles John,
6, *Westwick-gardens, West Kensington-park, W.*

1880 Schreiber, Charles, M.P.,
Langham House, 11, *Portland-place, W.*

1878 Scott, Arthur J.,
22, *Grafton-street, New Bond-street, W.*

1875 Scott, Sir Edward Henry, Bart., J.P.,
27, *Grosvenor-square, W.*

Year of Election.

1880 *Seeley, Charles, jun., M.P.,
Sherwood Lodge, Nottingham.

1873 Seyd, Richard,
38, *Lombard-street, E.C.*

1841 Shaftesbury, The Right Hon. the Earl of, K.G.,
(*Honorary Vice-President*),
24, *Grosvenor-square, W.*

1879 Shepheard, Wallwyn Poyer B., M.A.,
24, *Old Buildings, Lincoln's Inn, W.C.*

1871 Sidgwick, Henry,
Trinity College, Cambridge.

1878 Simmonds, G. H.,
1, *Whitehall, S.W.*

1850 Singer, Charles Douglas,
9, *The Terrace, Upper Clapton, E.*

1882 Skinner, C. Weeding,
Hill Crest, Theydon Bois, Essex.

1881 Skrine, Francis Henry,
United Service Club, Calcutta, India.

1878 *Slaughter, Mihill,

1877 Sloley, Robert Hugh.
121, *Bishopsgate-street Within, E.C.*

1869 Smee, Alfred Hutcheson, M.R.C.S.,
The Grange, Wallington, Surrey.

1878 *Smith, Charles, M.R.I.A., F.G.S., Assoc. Inst. C.E.,
Barrow-in-Furness.

1874 Smith, Edward,
St. Mildred's House, Poultry, E.C.

1871 Smith, E. Cozens,
1, *Old Broad-street, E.C.*

1878 *Smith, George, LL.D., C.I.E.,
Serampore House, Napier-road, Edinburgh.

1877 Smith, Howard S.,
37, *Bennett's Hill, Birmingham.*

1878 *Smith, James,
South Indian Railway, Negapatam, Madras.

1880 Smith, Jervoise,
1, *Lombard-street, E.C.*

1877 Smith, John,
8, *Old Jewry, E.C.*

1879 Smith, J. Fisher,
76, *Cheapside, E.C.*

1880 Smith, Thomas Sherwood,
21, *Richmond-terrace, Clifton, Bristol.*

1867 *Smith, The Right Honourable William Henry, M.P.,
3, *Grosvenor-place, S.W.*

1855 Sowray, John Russell,
Office of Woods, 2, *Whitehall-place, S.W.*

Year of Election.	
1877	Spalding, Samuel, *South Darenth, Kent.*
1882	Spence, Thomas E. J., LL.B., *Yorkshire Society's School, Westminster Bridge-road, S.E.*
1867	*Spencer, Robert James, *High-street, Portsmouth.*
1876	Spensley, The Hon. Howard, F.R.G.S., *Kensington Palace Mansions, W.*
1881	Spice, Robert Paulson, C.E., 21, *Parliament-street, Westminster, S.W.*
1874	Spicer, James, J.P., *Harts, Woodford, Essex.*
1856	*Sprague, Thomas Bond, M.A., F.I.A., 26, *St. Andrew-square, Edinburgh.*
1872	Spriggs, Joseph, *Dale Cottage, Foxton, near Market Harbro'.*
1882	Stack, Thos. Neville,
1856	*Stainton, Henry Tibbats, *Mountsfield, Lewisham, S.E.*
1881	Stancliffe, Frederick, 42, *St. John-street, Montreal, Canada.*
1877	Stanford, Edward, 13 *and* 14, *Long Acre, W.C.*
1877	Staples, Sir Nathaniel Alexander, Bart., *Lissan, Cookstown, Tyrone, Ireland.*
1880	Stark, James, 17, *King's Arms-yard. E.C.*
1880	Stephens, William Davies, 4, *Abbotsford-terrace, Newcastle-on-Tyne.*
1882	*Stern, Edward D., 22, *Queen's-gate, South Kensington, S.W.*
1877	Stone, William A., 90, *Cannon-street, E.C.; West Hill Lodge, Dartford, Kent.*
1855	*Stott, John, F.I.A., 12, *Essex-villas, Kensington, W.*
1865	Strachan, Thomas Young, F.I.A., 18, *Grainger-street West, Newcastle-on-Tyne.*
1872	Strachey, General Richard, R.E., C.S.I., F.R.S., *India Office, Westminster, S.W.*
1880	Strutt, Hon. Frederick, *Milford House, near Derby.*
1880	*Summers, William, M.P. (*Sunnyside, Ashton-under-Lyne*), *Reform Club, Pall Mall, S.W.*
1881	Sykes, George Samuel, 1, *Grant's Lane, Calcutta, India.*

Year of Election.	
1859	*Tait, Patrick Macnaghten, F.R.G.S., 39, *Belsize Park, N.W.; and Oriental Club, W.*
1880	Taylor, George, 17, *Abchurch-lane, E.C.*
1877	Taylor, John E., 12, *Queen's Gate-gardens, South Kensington, S.W.*
1873	Taylor, Peter Alfred, M.P., 22, *Ashley-place, Westminster, S.W.*
1838	*Taylor, General Pringle, K.H.,
1882	Temperley, Joseph, 1, *Cail's-buildings, Newcastle-on-Tyne.*
1880	Temple, Sir Richard, Bart., G.C.S.I., D.C.L., &c., *Carlton Club, Pall Mall, S.W.*
1879	Thomas, William Angell, *King's College, Strand, W.C.*
1879	Thomas, W. Cave, 53, *Welbeck-street, Cavendish-square, W.*
1878	Thompson, Alfred Boyle, F.R.C.P. Edin., 18, *Serjeants'-inn, Temple, E.C.*
1878	Thompson, Captain C. Halford, (late R.A.), 9, *Colleton-crescent, Exeter.*
1864	*Thompson, Henry Yates, 26*a*, *Bryanston-square, W.*
1868	Thomson, James, 35, *Nicholas-lane, E.C.*
1871	Thomson, Thomas D., 57, *Moorgate-street, E.C.*
1877	Tiddy, Samuel Vesey, 66, *Coleman-street, E.C.*
1882	Tinker, James, 80, *Cromwell-road, S.W.*
1879	Tipping, William, *Oakfield House, Ashton-under-Lyne.*
1882	Tomkins, George, LL.D., 132, *Piccadilly, W.*
1855	Tomline, Colonel George, 1, *Carlton House-terrace, S.W.*
1868	*Treatt, Frank Burford, *Immigration Office, Sydney, N.S. Wales.*
1868	Tritton, Joseph Herbert, 54, *Lombard-street, E.C.*
1880	Tupp, Alfred Cotterill, (*Accountant-General, Madras*), *c/o* Messrs. King, King, & Co., *Bombay.*
1878	Turnbull, Alexander, 118, *Belsize-park-gardens, N.W.*
1867	Turner, Thomas, *Ashley House, Kingsdown, Bristol.*
1878	Turton, William Woolley, *The Hollies, Bickley, Kent.*

Year of Election.

1880 Twist, John Charles,
78, *Union-road, Hurst Brook, Ashton-under-Lyne.*

1841 Tyndall, William Henry,
92, *Cheapside, E.C.*

1873 Underdown, Robert George,
London-road Railway Station, Manchester.

1877 *Urlin, Richard Denny,
22, *Stafford-terrace, Phillimore-gardens, W.*

1842 Valpy, Richard,
5, *Rutland-gate, S.W.*

1868 Vanderbyl, Philip,
51, *Porchester-terrace, W.*

1880 Van de Linde, Gérard, A.C.A.,
12, *Laurence Pountney-lane, Cannon-street, E.C.*

1874 Vian, William John,
64, *Cornhill, E.C.*

1876 Vigers, Robert,
4, *Frederick's-place, Old Jewry, E.C.*

1877 Vine, John Richard Somers,
45, *St. Paul's-road, Camden-square, N.W.*

1873 Vivian, Major Quintus, D.L., F.R.G.S.,
17, *Chesham-street, S.W.*

1861 Waddell, James,
1, *Queen Victoria-street, E.C.*

1877 Waddy, Henry Edward, L.R.C.P., M.R.C.S.,
2, *Clarence-street, Gloucester.*

1873 Wakeford, Henry,
Home Office, Whitehall, S.W.

1857 *Walford, Cornelius, F.I.A.,
86, *Belsize-park-gardens, N.W.*

1871 *Walker, R. Bailey,
Ribblesdale Cottage, Wellington-road, Fallowfield.

1882 Wallen, Robert,
Harlech, Hawthorn, near Melbourne, Victoria.

Year of Election.	
1877	Wallington, Charles, 51, *Moorgate-street, E.C.*
1868	Wallis, Charles, J., 21, *May Grove-road, Brondesbury, N.W.*
1880	Wallis, E. White, F.M.S., 1, *Springfield-road, St. John's Wood, N.W*
1876	Walter, Arthur Fraser, 15, *Queen's Gate-terrace, S.W.*
1877	Walter, Captain Edward, *Commissionaires' Office*, 419, *Strand, W.C.*
1850	Walter, John, M.P., 40, *Upper Grosvenor-street, W.*
1879	Wansey, Arthur H., *Sambourne, Stoke Bishop, Bristol.*
1873	Waring, Charles, 19B, *Grosvenor-square, S.W.*
1865	Waterhouse, Edwin, B.A., 44, *Gresham-street, E.C.*
1873	Watson, J. Forbes, M.A., M.D., LL.D. *India Museum, South Kensington, W.*
1882	Watson, Walter, 52, *Balmes-road, Southgate-road, N.*
1865	Watson, William West, *City Chamberlain, Glasgow.*
1865	Webster, Alphonsus, 44, *Mecklenburg-square, W.C.*
1873	Webster, James Hume, 14, *Chapel-street, Park-lane, W.*
1873	Weguelin, Thomas Matthias, 14, *Devonshire-street, Portland-place, W.*
1879	Weir, William, 38, *South Audley-street, W.*
1873	*Welby, Sir Reginald Earle, K.C.B., *The Treasury, Whitehall, S.W.*
1879	Welch, John Kemp, J.P., *Clock House, Clapham-common, S.W.*
1855	Weldon, James Walton, 1, *St. James's-square, S.W.*
1873	Wellington, His Grace the Duke of, K.G., &c., &c. *Apsley House, Piccadilly, W.*
1873	Wells, W. Lewis, 66, *Old Broad-street, E.C.*
1855	Welton, Thomas Abercrombie, (5, *Moorgate-street, E.C.*), *Rectory Grove House, Clapham, S.W.*
1879	Wenley, James Adams, *Bank of Scotland, Bank-street, Edinburgh*
1876	Westgarth, William, 28, *Cornhill, E.C.*
1879	*Westlake, John, Q.C., LL.D., *The River House*, 3, *Chelsea Embankment, S.W.*

Year of Election.	
1882	*Whadcoat, J. H., *Halifax, Yorkshire.*
1878	Wharton, James, 10, *Buckland-crescent, Belsize-park, N.W.*
1859	Whitbread, Samuel, M.P., 10, *Ennismore-gardens, Princes-gate, S.W.*
1876	Whitcher, John, Jr., F.I.A., 81, *King William-street, E.C.*
1868	White, James, 8, *Thurloe-square, South Kensington, S.W.*
1863	White, Leedham, 44, *Onslow-gardens, S.W.*
1879	White, Robert Owen, J.P., *The Priory, Lewisham, S.E.*
1871	White, William, 70, *Lombard-street, E.C.*
1878	Whiteford, William, 3, *Temple-gardens, E.C.*
1873	Whitehead, Jeffery, 39, *Throgmorton-street, E.C.*
1879	*Whitwill, Mark, J.P., *Redland House, Durdham-park, Bristol.*
1878	Wilcox, William, L.R.C.P. (Edin.), M.R.C.S., *Holly House, North Walsham, Norfolk.*
1875	Wilkinson, Thomas Read, *Manchester and Salford Bank, Manchester.*
1860	Willans, John Wrigley, *Beech Holme, Burley, Leeds.*
1879	Williams, Edward, *Cleveland Lodge, Middlesborough.*
1880	Williams, Colonel E. C. J., R.E., C.I.E., *India Office, Whitehall.*
1864	Williams, Frederick Bessant, 2, *Ludgate Hill, E.C.*
1881	Williams, Henry Maunder, 58, *Acre-lane, Brixton, S.W.*
1870	Williams, H. R., 3, *Lime-street, E.C.; and Oak Lodge, Highgate, N.*
1876	Williams, John Worthey, 5, *Marlborough-road, Upper Holloway, N.*
1877	Williams, Richard Price, C.E., 38, *Parliament-street, S.W.*
1875	Wilson, Edwards D. J., M.A., *Airlie House, The Grove, Camberwell, S.E.*
1874	*Wilson, Robert Porter, 5, *Cumberland-terrace, Regent's-park, N.W.*
1878	Wilton, Francis, M.R.C.S., *Ticehurst, Sussex.*
1872	*Winch, William R., *North Mymms Park, Hatfield, Herts.*

Year of Election.	
1868	Wood, H. W. I. (*Calcutta*), *Care of Messrs. Richardson*, 13, *Pall Mall, S.W.*
1877	Woodrow, Thomas John, *Sisland Cottage, Wanstead.*
1873	Woods, Henry, *Warnford Park, Bishop's Waltham, Hants.*
1838	Woolhouse, Wesley Stoker Barker, F.R.A.S., *Alwyne Lodge, Alwyne-road, Canonbury, N.*
1874	Woolner, Thomas, R. A., 29, *Welbeck-street, Cavendish-square, W.*
1878	Worsfold, Rev. J. N., M.A., *Haddlesey Rectory, near Selby, Yorkshire.*
1880	Wren, Walter, 7, *Powis-square, W.*
1838	*Wyatt-Edgell, Rev. Edgell, 40, *Lower Grosvenor-street, W.; Stanford Hall, Rugby.*
1872	Yeatman, Morgan, *Shawfield, Bromley, Kent.*
1879	Yeats, John, LL.D., 7, *Beaufort-square, Chepstow.*
1877	*Youll, John Gibson, *Jesmonds-road, Newcastle-on-Tyne.*
1849	*Young, Charles Baring, 12, *Hyde-park Terrace, W.*
1882	Young, E. M., 123, *Bishopsgate-street Within, E.C.*

*** *The Executive Committee request that any inaccuracy in the foregoing list may be pointed out to the* Assistant Secretary *and that all changes of address may be notified to him, so that delay in forwarding communications and the publications of the Society may be avoided.*

HONORARY MEMBERS.

HIS ROYAL HIGHNESS THE PRINCE OF WALES, K.G.,
Honorary President.

EUROPE.

Austria and Hungary.

Budapest ..... M. CHARLES KELETI, *Chef du Bureau Royal Hongrois, de Statistique. Conseiller Ministériel.*

Vienna ..... DR. HUGO FRANZ BRACHELLI, *Chef du Bureau de Statistique au Ministère de Commerce.*

,, ... S. E. M. le BARON de CZŒRNIG, *Conseiller intime actuel de S. M. Imp. et Royal.*

,, ... PROFESSOR Fr. XAVIER von NEUMANN-SPALLART, D.C.L., *Professor of Political Economy and Statistics, Agricultural College, University of Vienna; Imperial Councillor; Member of the Imperial Statistical Commission; Honorary Member of the Statistical Society of Paris and of the Cobden Club.*

,, ... VON MAX WIRTH, *Ancien Chef du Bureau de la Statistique, Suisse.*

Belgium.

Brussels ..... SIR HENRY PAGE TURNER BARRON, Bart., *Secretary of Legation, British Embassy.*

,, ... M. XAVIER HEUSCHLING, *Chef de Division au Ministère de l'Intérieur du Royaume de Belgique, Sécrétaire de la Commission Centrale de Statistique.*

,, ... M. le DR. E. JANSSENS, *Service d'Hygiène, Inspecteur du Santé de la Ville de Bruxelles, Membre Sécrétaire de la Commission Provinciale, et de la Commission Locale de Statistique à Bruxelles.*

Denmark.

Copenhagen .... PROFESSOR FALBE HANSEN, *Professor of Political Economy and Statistics in the University of Copenhagen.*

,, ... DR. SCHLEISNER, *Medical Officer of Health.*

France.

Paris ..... M. le Dr. JACQUES BERTILLON, *Professeur de Démographie à l'Ecole d'Anthropologie; Chef de la Statistique Municipale de Paris; Laureat de l'Académie des Sciences, &c., &c.*

Paris ..... M. MAURICE BLOCK.

„ ..... M le Dr. ARTHUR CHERVIN, *Membre de la Société Statistique de Paris; Directeur des Annales de Démographie Internationale.*

„ ..... M. MAXIMIM DELOCHE, *Membre de l'Institut, Directeur de la Statistique Générale de la France.*

„ ..... M. CLEMENT JUGLAR, *President Sortant de la Société de Statistique de Paris.*

„ ..... M. ALFRED LEGOYT, *Ancien Directeur de la Statistique Générale.*

„ ..... M. E. LEVASSEUR, *Membre de l'Institut, Professeur au Collége de France.*

„ ..... M. DE PARIEU, *Membre de l'Institut, Ancien Député, Sénateur, et Ministre.*

„ ..... M. LE PLAY, *Ancien Sénateur.*

„ ..... M. le PRÉSIDENT DE LA SOCIÉTÉ DE STATISTIQUE DE PARIS.

„ ..... THE HON. M. JÉAN BAPTISTE LÉON SAY, *President of the Senate of the Republic of France.*

Germany.

Bavaria ..... DR. GEORGE MAYR, *Formerly Director of the Royal Bureau of Statistics; Ministerialrath und Universitats Professor.*

„ ..... DR. G. CHARLES LEOPOLD SEUFFERT, *Chief Inspector and Director of the Royal Custom House at Simbach.*

Berlin ..... DR. CHARLES BECKER, *Geheimer oberregierungsrath. Director des Kaiserll: Statistischen Amts.*

„ ..... DR. ERNEST ENGEL, *Director of the Royal Statistical Office of Prussia.*

Frankfurt ..... THE PRESIDENT OF THE STATISTICAL SOCIETY OF FRANKFURT.

Great Britain and Ireland.

Dublin .....THE PRESIDENT OF THE STATISTICAL AND SOCIAL ENQUIRY SOCIETY OF IRELAND.

Manchester ..... THE PRESIDENT OF THE MANCHESTER STATISTICAL SOCIETY.

Greece.

Athens ..... A. MANSOLAS, *Chef de Division, Directeur du Bureau de Statistique Hellénique.*

Italy.

Genoa ..... SIGNOR GEROLAMO BOCCARDO, *Senatore del Regno, Professore di Economia Politica e di Statistica nell' Università di Genova.*

Padua ..... SIGNOR EMILIO MORPURGO, *Professore di Statistica e rettore dell' Università di Padova; già Deputato al Parlamento già Segretario Generale del Ministero di Agricoltura e Commercio.*

Pavia ..... DR. LUIGI COSSA, *Professore di Economica Politica nell' Università di Pavia, &c., &c.*

Rome..... SIGNOR LUIGI BODIO, *Professore Direttore della Statistica Generale del Regno.*

„ ..... PROFESSORE CESARE CONTINI, *Membre de la Société Statistique de Paris. Grand Chevalier de l'Ordre de Sa Majesté le Roi d'Italie.*

„ ..... S. E. CESARE CORRENTI, *Deputato al Parlamento; Vice-Presidente della Giunta Centrale di Statistica; già Ministro della Publica Istruzione.*

„ ..... SIGNOR ANGELO, MESSEDAGLIA, *Deputato al Parlamento; Professore di Statistica nell' Università di Roma.*

„ ..... IL MARCHESE ERMENEGILDO DEI CINQUE QUINTILI, *Avvocato, Segretario Generale della Commissione degl' Ospedali di Roma.*

Turin..... SIGNOR GIOVANNI FLECHIA, *Professore e Preside della Facolta di Filosofia dell' Università di Torino.*

Venice ..... SIGNOR FRANCESCO FERRARA, *Professore e Direttore della Scuola Superiore di Commercio a Venezia; già Deputato al Parlamento; già Ministro delle Finanze.*

Portugal.

Lisbon ..... M. A. J. D'AVILA, *Ministre d'État honoraire, Conseilleur d'État, et Député des Cortès.*

Russia.

St. Petersburg HIS EXCELLENCY M. SEMENOW, *Directeur du Comité Central de Statistique, Conseiller d'État actuel.*

„ M. le DR. J. B. VERNADSKI, *Conseiller d'État actuel, Ex-professeur.*

„ M. A. VESSELOVSKY, *Sécrétaire du Comité Scientifique du Ministère Impérial des Finances.*

Spain.

Madrid ..... SEÑOR DON JOSÉ MAGAZ Y JAIME.

Sweden and Norway.

Christiania..... PROFESSOR T. H. ASCHEHOUG, *Membre de l'Assemblée Nationale de la Norvège.*

„ ..... M. A. N. KIAER, *Chef du Bureau de Statistique au Ministère de l'Intérieur, Membre de la Société Royale des Sciences.*

„ ..... THOMAS MICHELL, Esq., C.B., F.R.G.S., *H.B.M. Consul-General.*

Stockholm ..... M. le DR. FREDERIK THEODOR BERG, *Ancien Chef du Bureau Central de Statistique de la Suède.*

„ ..... M. EDWARD SCHEUTZ, *Ingénieur Civil.*

Switzerland.

Geneva ..... M. MALLET.

Turkey.

Constantinople. HIS EXCELLENCY AHMED VEFYK PASHA, *Honorary Member of the Statistical Society of Paris.*

AMERICA.

Dominion of Canada.

Ottawa ..... JOHN LANGTON Esq., *Auditor-General.*

United States.

Albany, N.Y. .... THE HON. WILLIAM BARNES, *Counsellor-at-Law (Ex-Superintendent of the Insurance Department).*

Dorchester, Mass. DR. EDWARD JARVIS, A.M., *President of the American Statistical Association, Boston.*

New Haven, Conn. FRANCIS A. WALKER, Esq., M.A., *Professor of Political Economy, Yale College.*

Norwich, Conn. THE HON. DAVID A. WELLS, *President of the American Association for the Promotion of Social Science, Corresponding Member of the Institute of France.*

Taunton, Mass. JOHN E. SANFORD, Esq., *Speaker of the House of Representatives. Insurance Commissioner.*

Washington .... THE HON. CHARLES F. CONANT, *late Assistant Secretary to the Treasury of the United States.*

„ .... JOHN S. BILLINGS, Esq., M.D., *Vice-President of the National Board of Health of the United States of America.*

„ .... EDWARD YOUNG, Esq., *formerly Chief of the Bureau of Statistics, United States of America.*

AUSTRALASIA.

New South Wales.

Sydney ..... EDWARD GRANT WARD, Esq., *Registrar-General.*

New Zealand.

Wellington ..... JAMES HECTOR, Esq., M.D., F.R.S.

Queensland.

Brisbane ..... HENRY JORDAN, Esq., *Registrar-General.*

South Australia.

Adelaide ..... JOSIAH BOOTHBY, Esq., C.M.G., *Under Secretary and Government Statist of South Australia.*

Tasmania.

Hobart ..... EDWIN CRADOCK NOWELL, Esq., *late Government Statistician.*

Victoria.

Melbourne ..... HENRY HEYLYN HAYTER, Esq., C.M.G., *Government Statist.*

,, ... WILLIAM HENRY ARCHER, Esq., F.I.A., F.L.S., &c.

NOTE.—The Executive Committee request that any inaccuracies in the foregoing List of HONORARY MEMBERS may be pointed out, and that all changes of address may be notified to the Secretary, so that delay in forwarding communications and the publications of the Society may be avoided.

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RULES OF THE STATISTICAL SOCIETY.

Objects of the Society.

1. THE Statistical Society was established to collect, arrange, digest, and publish facts illustrating the condition and prospects of society, in its material, social and moral relations. These facts are for the most part arranged in tabular forms, and in accordance with the principles of the numerical method.

The Society not only collects new materials, but condenses, arranges, and publishes those already existing, whether unpublished or published in diffuse and expensive forms, in the English or in any foreign language.

The Society likewise promotes the discussion of legislative and other public measures from the statistical point of view. These discussions form portions of the Transactions of the Society.

Constitution of the Society.

2. The Society consists of Fellows and Honorary Members, elected in the manner laid down in the following rules.

Number of Fellows and Honorary Members.

3. The number of Fellows shall be unlimited. Foreigners or British subjects of distinction residing abroad may be admitted as Honorary Members: of whom the number shall not be more than seventy at any one time.

Proposal of Fellows.

4. Every Candidate for admission as a Fellow of the Society, shall be proposed by two or more Fellows, who, shall certify from their personal knowledge of him or of his works, that he is a fit person to be admitted a Fellow of the Statistical Society. Every such certificate having been read and approved at a Meeting of the Council, shall be suspended in the meeting-room of the Society until the following Ordinary Meeting, at which the vote shall be taken upon it.

Election of Fellows.

5. In the election of Fellows, the votes shall be taken by ballot. No person shall be admitted unless at least sixteen Fellows vote, and unless he have in his favour three-fourths of the Fellows voting.

Admission of Fellows.

6. Every Fellow elect shall appear for his admission on or before the third Ordinary Meeting of the Society after his election, or within such time as shall be granted by the Council.

The manner of admission shall be thus:—

Immediately after the reading of the minutes, the Fellow elect, having first paid his subscription for the current year or his composition, shall sign the obligation contained in the Fellowship-book, to the effect following:—

"We, who have underwritten our "names, do hereby undertake, each for "himself, that we will endeavour to "further the good of the Statistical "Society for improving Statistical "Knowledge, and the ends for which "the same has been founded; that "we will be present at the Meet-"ings of the Society as often as con-"veniently we can, and that we will "keep and fulfil the Rules and Orders "of this Society: provided that when-"soever any one of us shall make known, "by writing under his hand, to the "President for the time being, that he "desires to withdraw from the Society, "he shall be free thenceforward from "this obligation."

Whereon the President, taking him by the hand, shall say,—"*By the autho-"rity and in the name of the Statis-"tical Society I do admit you a "Fellow thereof.*"

Upon their admission Fellows shall have the right of attaching to their names the letters F.S.S.

Admission of Honorary Members.

7. There shall be Two Meetings in the year, on such days as shall be hereafter fixed by the Council, at which *Honorary Members* may be elected.

No Honorary Member can be recommended for election but by the Council. Any Member of the Council may propose a Foreigner or British subject of distinction residing abroad at any Meeting of the Council, delivering at the same time a written statement of the qualifications, offices held by, and published works of the person proposed; and ten days' notice at least shall be given to every Member of the Council, of the day on which the Council will vote by ballot on the question whether they will recommend the person proposed. No such recommendation to the Society shall be adopted unless at least three-fourths of the votes are in favour thereof.

Notice of the recommendation shall be given from the chair at the Meeting of the Society next preceding that at which the vote shall be taken thereon. No person shall be elected an Honorary Member unless sixteen Fellows vote and three-fourths of the Fellows voting be in his favour.

The Council shall have power to elect as Honorary Members, the Presidents for the time being of the Statistical Societies of Dublin, Manchester, and Paris, and the President of any other Statistical Society at home or abroad.

Payments by Fellows.

8. Every Fellow of the Society shall pay a yearly subscription of *Two Guineas*, or may at any time compound for his future yearly payments by paying at once the sum of Twenty Guineas.*

Defaulters.— Withdrawal of Fellows.

9. All yearly payments are due in advance on the 1st of January, and if any Fellow of the Society have not paid his subscription before the 1st of July, he shall be applied to in writing by the Secretaries, and if the same be not paid before the 1st of January of the second year, a written application shall again be made by the Secretaries, and the Fellow in arrear shall cease to receive the Society's publications, and shall not be entitled to any of the privileges of the Society until such arrears are paid; and if the subscription be not discharged before the 1st of February of the second year, the name of the Fellow thus in arrear shall be exhibited as a defaulter on a card suspended in the meeting-rooms; and if, at the next Anniversary Meeting, the amount still remain unpaid, the defaulter shall be announced to be no longer a Fellow of the Society, the reason for the same being at the same time assigned. No Fellow of the Society can withdraw his name from the Society's books, unless all arrears be paid; and no resignation will be deemed valid unless a written notice thereof be communicated to the Secretaries. No Fellow shall be entitled to vote at any Meeting of the Society until he shall have paid his subscription for the current year.

Expulsion of Fellows.

10. If any Fellow of the Society, or any Honorary Member, shall so demean himself that it would be for the dishonour of the Society that he longer continue to be a Fellow or Member thereof, the Council shall take the matter into consideration; and if the majority of the Members of the Council present at some Meeting (of which and of the matter in hand such Fellow or Member, and every Member of the Council, shall have due notice) shall decide by ballot to recommend that such Fellow or Member be expelled from the Society, the President shall at the next Ordinary Meeting announce to the Society the recommendation of the Council, and at the following Meeting the question shall be decided by ballot, and if at least three-fourths of the number voting are in favour of the expulsion, the President shall forthwith cancel the name in the Fellowship-book, and shall say,—

"By the authority and in the name "of the Statistical Society, I do declare "that A. B. (naming him) is no longer "a Fellow (or Honorary Member) "thereof."

* Cheques should be made payable to "The Statistical Society," and crossed "Messrs. Drummond and Co."

And such Fellow or Honorary Member, shall thereupon cease to be of the Society.

Trustees.

11. The property of the Society shall be vested in *three Trustees*, chosen by the Fellows. The Trustees are eligible to any other offices in the Society.

President, Council, and Officers.

12. The Council shall, independent of the Honorary Vice-Presidents, consist of thirty-one Members, of whom one shall be the President, and four be nominated Vice-Presidents. The Council shall be elected as hereafter provided. Any five of the Council shall be a quorum. From the Council shall be chosen a *Treasurer*, *three Secretaries*, and a *Foreign Secretary*, who may be one of the Secretaries. Six Fellows, at least, who were not of the Council of the previous year, shall be annually elected.

Election of President and Officers.

13. The President shall be chosen yearly by the Fellows. The same person shall not be eligible more than two years in succession.

The former Presidents who are continuing Fellows of the Society shall be Honorary Vice-Presidents; four Vice-Presidents shall be yearly chosen from the Council by the President.

Any Honorary Vice-President may take part in the deliberations of the Council on expressing a wish to that effect: and when attending the Meetings of the Council, shall exercise all the rights and powers of a Member of the Council.

The Treasurer and Secretaries shall be chosen yearly by the Fellows from the Council.

Election of Council.

14. The Council shall, previously to the Anniversary Meeting, nominate, by ballot, the *Fellows whom they recommend* to be the next President and Council of the Society. They shall also recommend for election a Treasurer and Secretaries (in accordance with Rule 12). Notice shall be sent to every Fellow whose residence is known to be within the limits of the metropolitan post, at least a fortnight before the Anniversary Meeting, of the names of Fellows recommended by the Council.

Extraordinary Vacancies.

15. On any *extraordinary vacancy* of the Office of the President, or other Officer of the Society, or in the Council, the Secretaries shall summon the Council with as little delay as possible, and a majority of the Council, thereupon meeting in their usual place, shall, by ballot, and by a majority of those present, choose a new President, or other Officer of the Society, or Member of the Council, to be so until the next Anniversary Meeting.

Committees.

16. The Council shall have power to appoint *Committees of Fellows* and also an Executive Committee of their own body. The Committees shall report their proceedings to the Council. No report shall be communicated to the Society which is not approved by the Council.

Meetings Ordinary and Anniversary.

17. The *Ordinary Meetings* of the Society shall be monthly, or oftener, during the Session, which shall be from the 1st of November to the 1st of July, both inclusive, on such days and at such hours as the Council shall declare. The *Anniversary Meeting* shall be held on such day in June of each year as shall be appointed by the Council for the time being.

Business of Ordinary Meetings.

18. The business of the *Ordinary Meetings* shall be to admit Fellows, to read and hear reports, letters, and papers on subjects interesting to the Society. Nothing relating to the rules or management of the Society shall be discussed at the Ordinary Meetings, except that the *Auditors' Report* shall be received at the Ordinary Meeting in *February*, and that the Minutes of the Anniversary Meeting, and of every Special General Meeting, shall be confirmed at the next Ordinary Meeting after the day of such Anniversary or Special General Meeting. *Strangers* may be introduced to the Ordinary

Meetings, by any Fellow, with the leave of the President, Vice-President, or other Fellow presiding at the Meeting.

Business of Anniversary Meeting.

19. The business of the *Anniversary Meeting* shall be to elect the Officers of the Society, and to discuss questions on its rules and management. No Fellows or Honorary Members shall be proposed or admitted at the Anniversary Meeting. No Fellow shall moot any question on the rules or management of the Society at the Anniversary Meeting, unless after *three weeks' notice* thereof given to the Council, but amendments to any motion may be brought forward without notice, so that they relate to the same subject of motion. The Council shall give fourteen days' notice to every Fellow of all questions of which such notice shall have been given to them.

Special General Meetings.

20. The Council may, at any time, call a *Special General Meeting* of the Society when it appears to them necessary. Any ten Fellows may require a Special General Meeting to be called, by notice in writing signed by them, delivered to one of the Secretaries at an Ordinary Meeting, specifying the questions to be moved. The Council shall, within one week of such notice, appoint a day for such Special General Meeting, and shall give one week's notice of every Special General Meeting, and of the questions to be moved, to every Fellow within the limits of the metropolitan post, whose residence is known. No business shall be brought forward at any Special General Meeting other than that specified in the notice for the same.

Auditors.

21. At the *first Ordinary Meeting* of each year, the Fellows shall choose two *Auditors*, not of the Council, who, with one of the Council, chosen by the Council, shall audit the Treasurer's accounts, and report thereon to the Society, which report shall be presented at the Ordinary Meeting in February. The Auditors shall be empowered to examine into the particulars of all expenditure of the funds of the Society where they shall see occasion, and may report their opinion upon any part of it.

Duties of the President.

22. The *President* shall preside at all Meetings of the Society, Council, and Committees, which he shall attend, and in case of an equality of votes, shall have a second or casting vote. He shall sign all diplomas of admission of Honorary Members. He shall admit and expel Fellows and Honorary Members, according to the rules of the Society.

Duties of the Treasurer.

23. The *Treasurer* shall receive all moneys due to, and pay all moneys due from, the Society, and shall keep an account of his receipts and payments. No sum exceeding Ten Pounds shall be paid but by order of the Council, excepting always any lawful demand for rates or taxes. He shall invest the moneys of the Society in such manner as the Council shall from time to time direct.

Duties of the Secretaries.

24. The *Secretaries* shall, under the control of the Council, conduct the correspondence of the Society; they or one of them shall attend all Meetings of the Society and Council, and shall have the care of duly recording the Minutes of the Proceedings. They shall issue the requisite notices, and read such papers to the Society as the Council may direct.

Powers of the Vice-Presidents.

25. A *Vice-President*, whether Honorary or nominated, in the chair, shall act with the power of the President, in presiding and voting at any Meeting of the Society or Council, and in admitting Fellows; but no Vice-President shall be empowered to sign diplomas of admission of Honorary Members, or to expel Fellows. In the absence of the President and Vice-Presidents, any Fellow of the Society may be called upon, by the Fellows then present, to preside at an Ordinary Meeting. The Fellow so presiding may admit Fellows, but shall not be empowered to act otherwise as President, or Vice-President.

Powers of the Council.

26. The Council shall have control over the papers and funds of the Society, and may, as they shall see fit, direct the publication of papers and the expenditure of the funds, so, that they shall not at any time contract engagements on the part of the Society beyond the amount of the balance that would be at that time in the Treasurer's hands, if all pre-existing debts and liabilities had been satisfied.

27. The Council shall be empowered at any time to frame *Regulations* not inconsistent with these rules, which shall be, and remain in force until the next Anniversary Meeting at which they shall be either affirmed or annulled; but no Council shall have power to renew Regulations which have once been disapproved at an Anniversary Meeting.

28. No Dividend, Gift, Division, of Bonus in money shall be made by the Society, unto or between any of the Fellows or Members, except as hereinafter provided.

29. The Council shall publish a Journal of the Transactions of the Society, and such other Statistical Publications, as they may determine upon, and may from time to time pay such sums to Editors and their assistants, whether Fellows of the Society or not, as may be deemed advisable.

30. All communications to the Society are the property of the Society, unless the Council allow the right of property to be specially reserved by the Contributors.

REGULATIONS OF THE LIBRARY.

1. The Library is open daily from 10 a.m. till 5 p.m., except on Saturdays, when it closes at 2 p.m.; and it is entirely closed during the month of September.

2. Members of the Society are permitted to take out Books on making personal application, or by letter addressed to the Librarian.

3. Members are not to have more than two works at a time, nor keep any books longer than a month.

4. Scientific Journals and Periodicals are not circulated until the volumes are completed and bound.

5. Cyclopædias and works of reference are not circulated.

6. Any Member damaging a book, either replaces the work, or pays a fine equivalent to its value.

7. Books taken from the shelves for reference, are *not* to be replaced, but must be laid on the Library table.

8. The Secretary shall report to the Council any infringement of these regulations.

DONORS TO THE LIBRARY.

During the Year 1882.

Foreign Countries.

Argentine Confederation.
Austria and Hungary
Belgium.
Bulgaria.
China.
Denmark.
Egypt.
France.
Germany.
Prussia.
Bavaria.
Saxony.
Greece.
Italy.
Japan.
Netherlands.
Portugal.
Roumania.
Russia.
Spain.
Sweden and Norway.
United States of America.
Uruguay.
The States of—
Indiana.
Iowa.
Kansas.
Massachusetts.
Michigan.
New York.
Ohio.
Pennsylvania.
Rhode Island.
Wisconsin.

Indian, Colonial, and other Possessions.

Bengal.
Berar.
Canada.
Cape of Good Hope.
Ceylon.
Cyprus.
Grenada.
India (British).
Jamaica.
Mauritius.
New South Wales.
New Zealand.
Panjab.
Queensland.
South Australia.
Tasmania.
Victoria.

Public Departments.

The Admiralty.
„ Army Medical Department.
„ Board of Trade.
„ Convict Prisons, Directors of.
„ Crown Agents for the Colonies.
„ Customs.
„ Factories, Inspectors of.
„ Fire Brigade, Metropolitan.
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HUNT'S MERCHANTS' MAGAZINE. (New York.) Vols. i to xii, and xv to xxvi.

SMITHSONIAN INSTITUTION. ANNUAL REPORTS OF THE REGENTS. The three first, and those for the years 1855, 1858, and 1866.

THOSE persons who are inclined to benefit the Society by legacies are recommended to adopt the following

FORM OF BEQUEST.

I give and bequeath unto the Statistical Society of London, the sum of £ , such legacy to be paid out of such part of my personal estate, not specifically bequeathed, as the law permits to be appropriated by will to such a purpose.

NOTE A.—All gifts by will to the Society of land, or of money secured on, or directed to be secured on, or to arise from the sale of, or directed to be laid out in the purchase of, land, will be void. Gifts may be made by will of stock in the public funds, shares or debentures of railway or other joint-stock companies, or money to be paid out of the testator's pure personal estate, or of personal chattels.

NOTE B.—Bequests may be made either for the general purposes of the Society, or to the Society's "Building Fund," which has been recently established.

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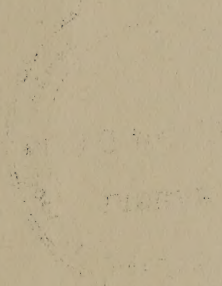

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